

Appendix A

RF Test Data for BT V4.1 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Speaker

Trade Mark: N/A

Test Model: S6

Environmental Conditions

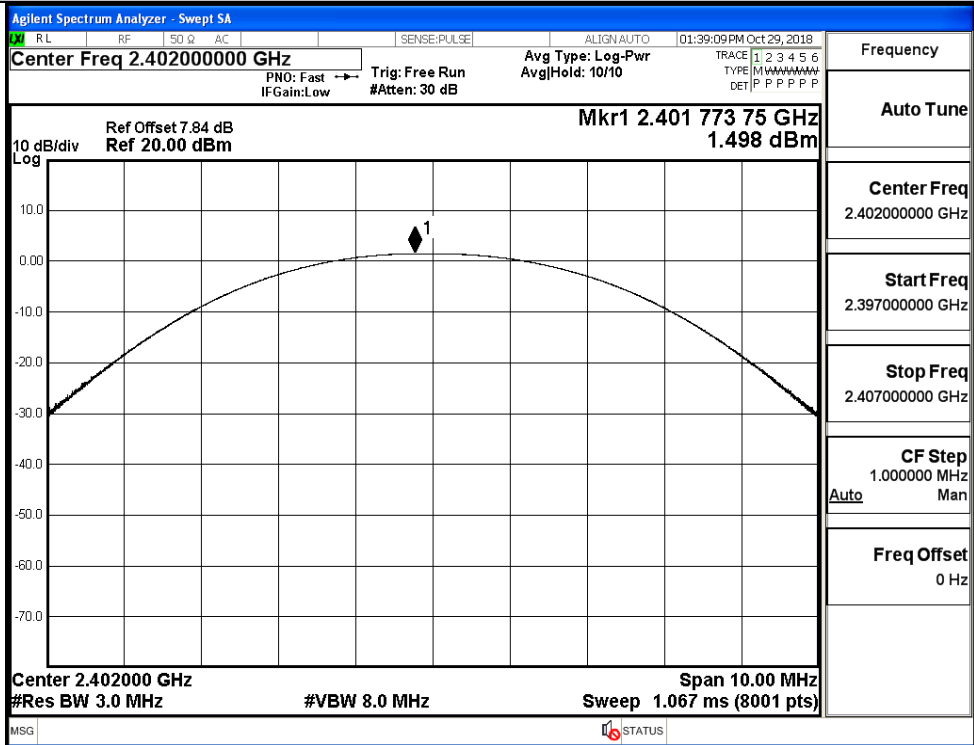
Temperature:	24.3 ° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	WangChuang
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

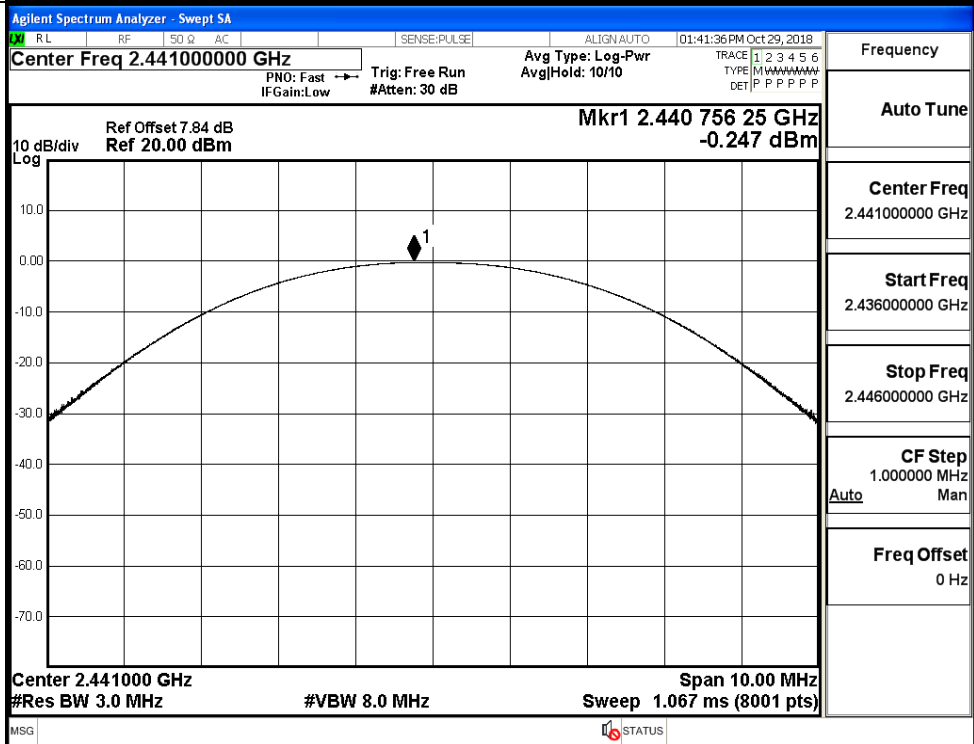
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.498	21	PASS
	MCH	-0.247	21	PASS
	HCH	0.876	21	PASS
$\pi/4$ DQPSK	LCH	0.652	21	PASS
	MCH	-0.880	21	PASS
	HCH	0.050	21	PASS
8DPSK	LCH	0.341	21	PASS
	MCH	-1.132	21	PASS
	HCH	-0.272	21	PASS

Test Graphs

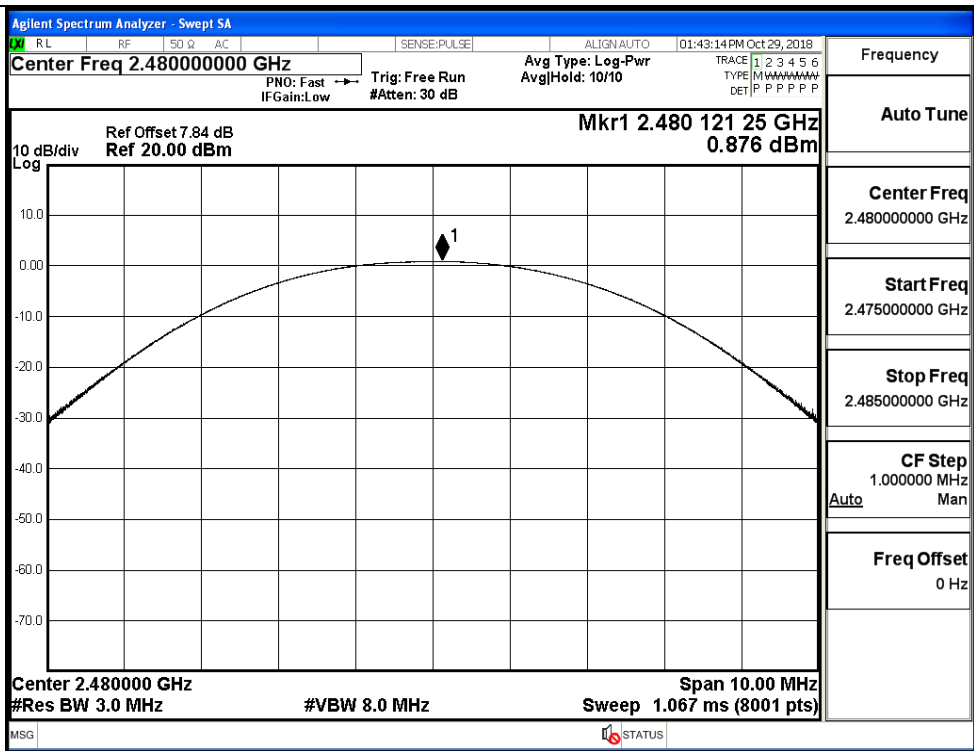
GFSK/LCH



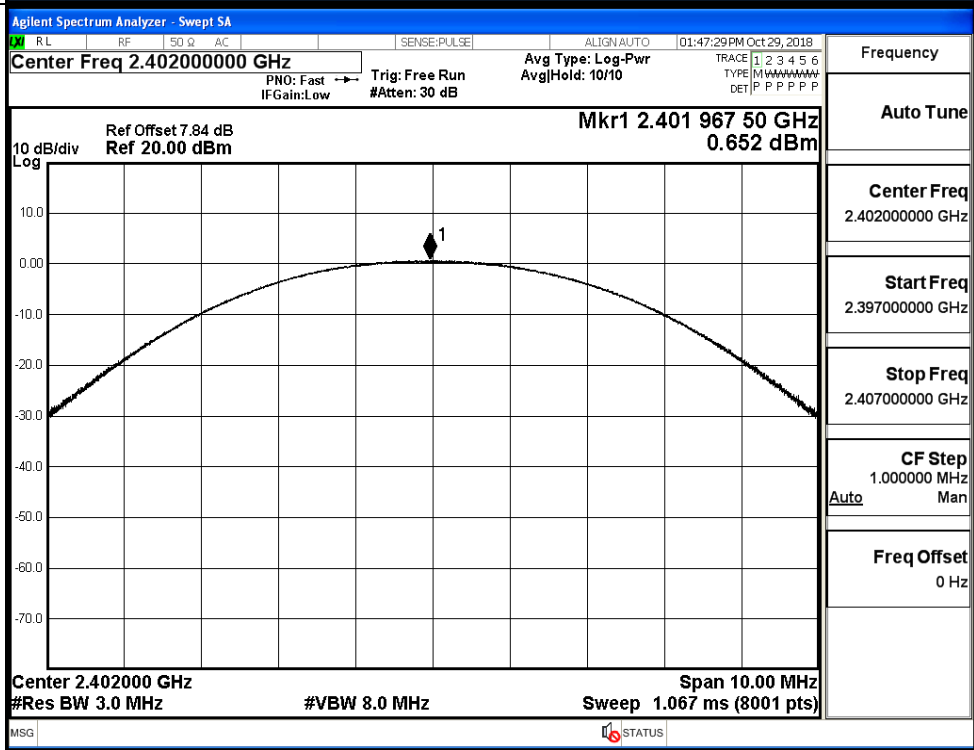
GFSK/MCH



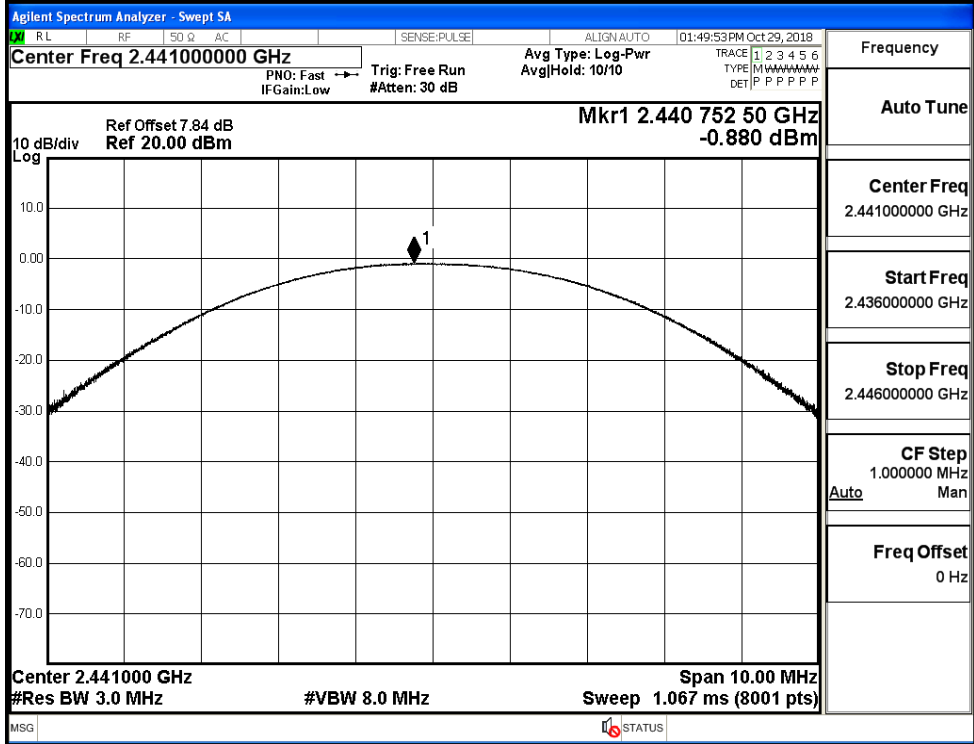
GFSK/HCH



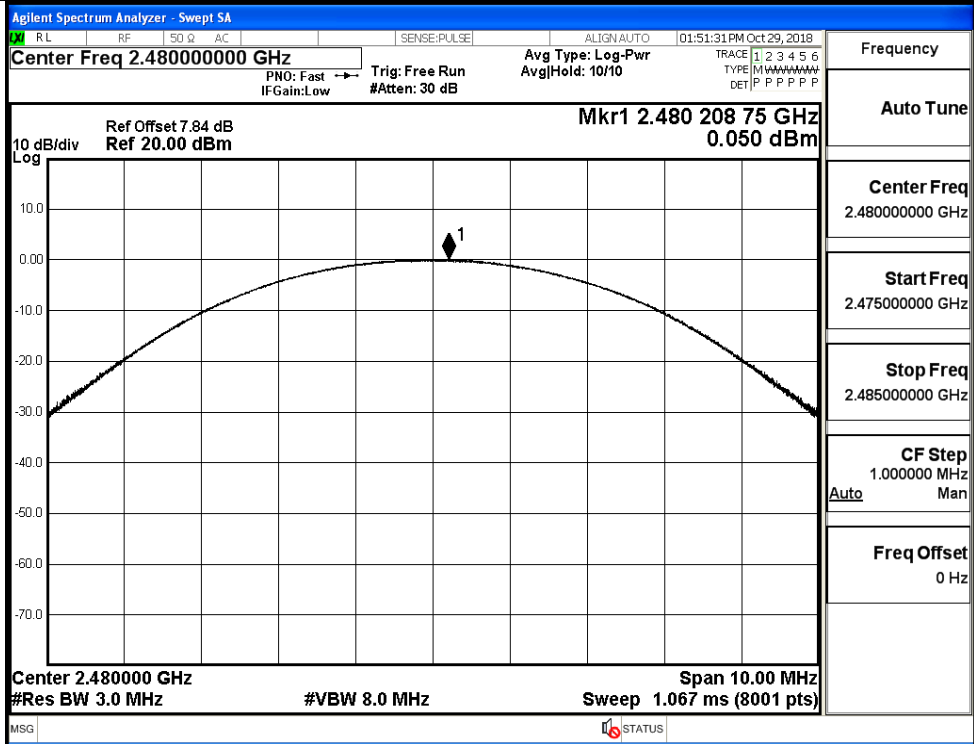
π /4DQPSK/LCH



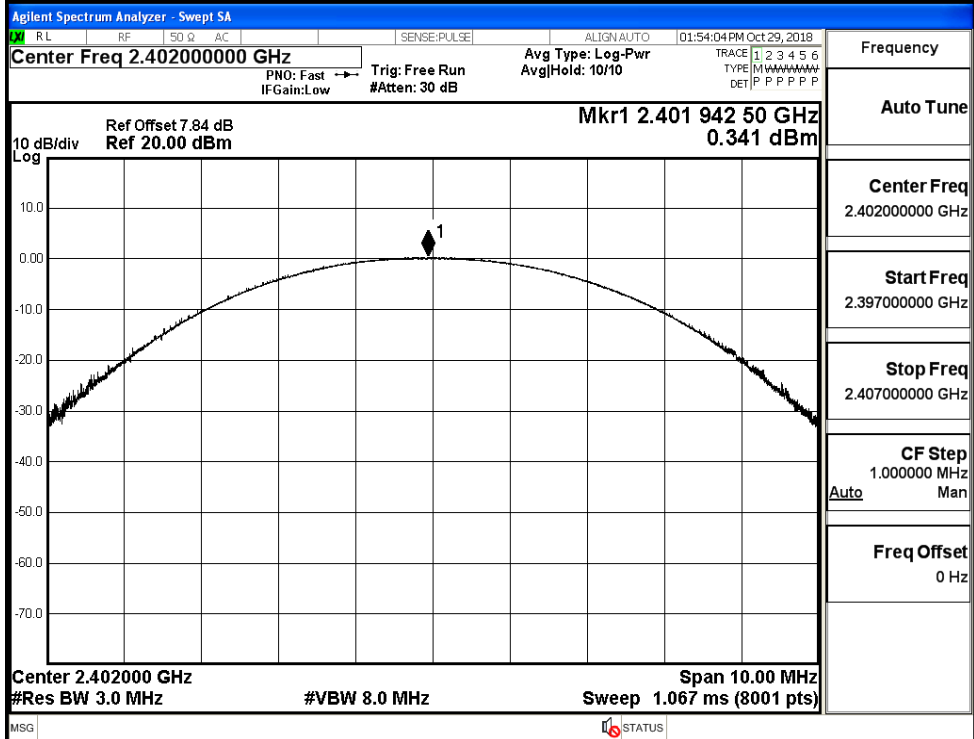
π /4DQPSK/MCH



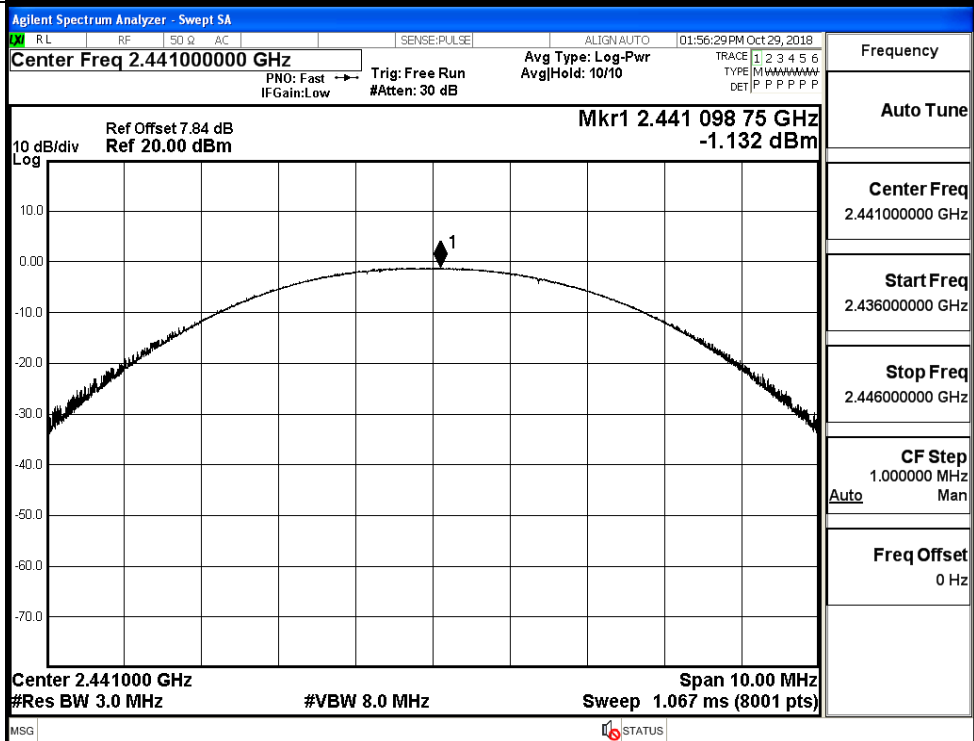
π /4DQPSK/HCH



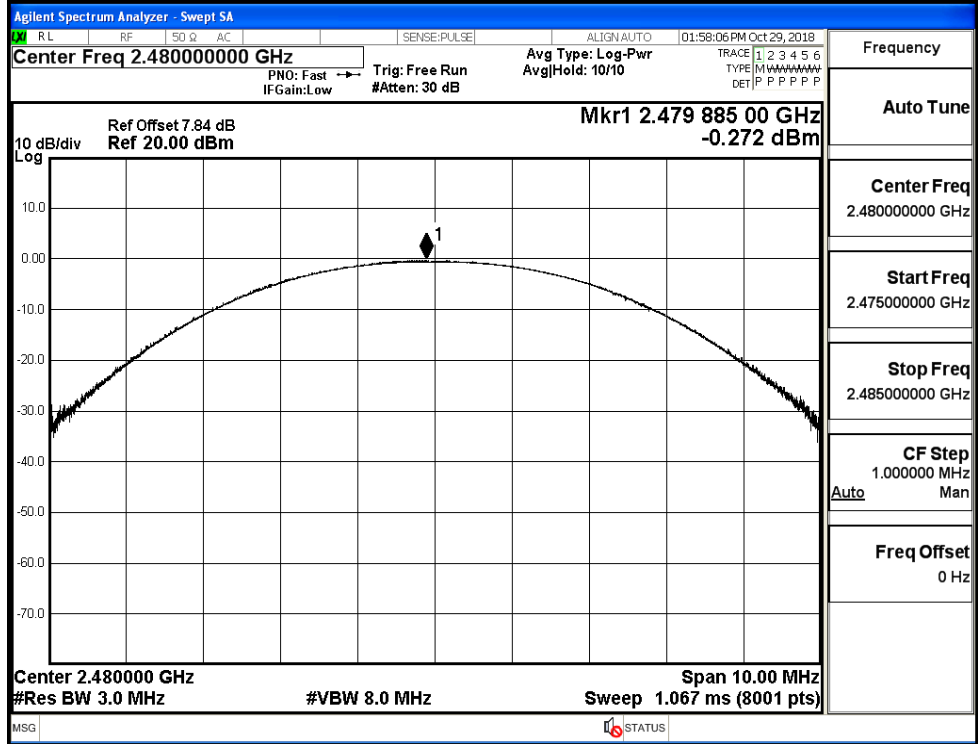
8DPSK/LCH



8DPSK/MCH



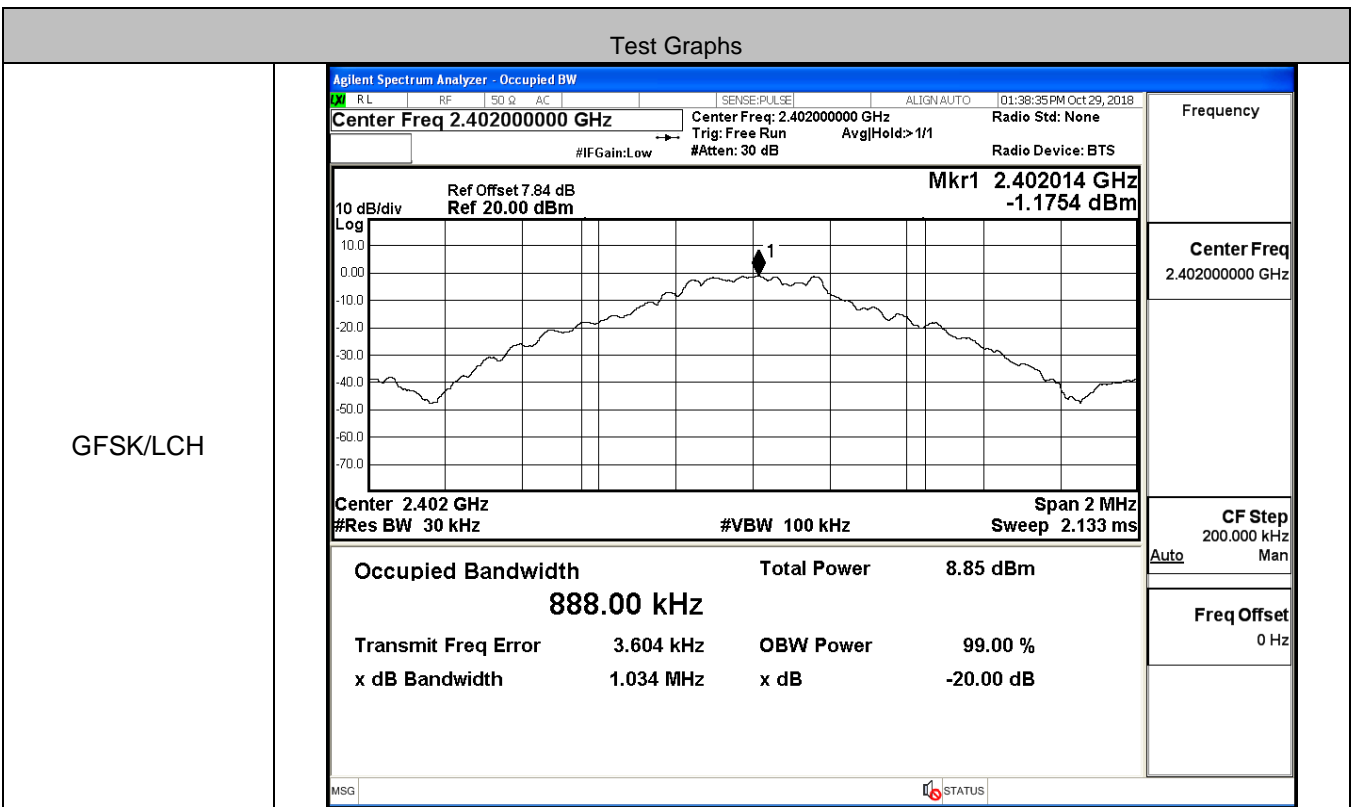
8DPSK/HCH



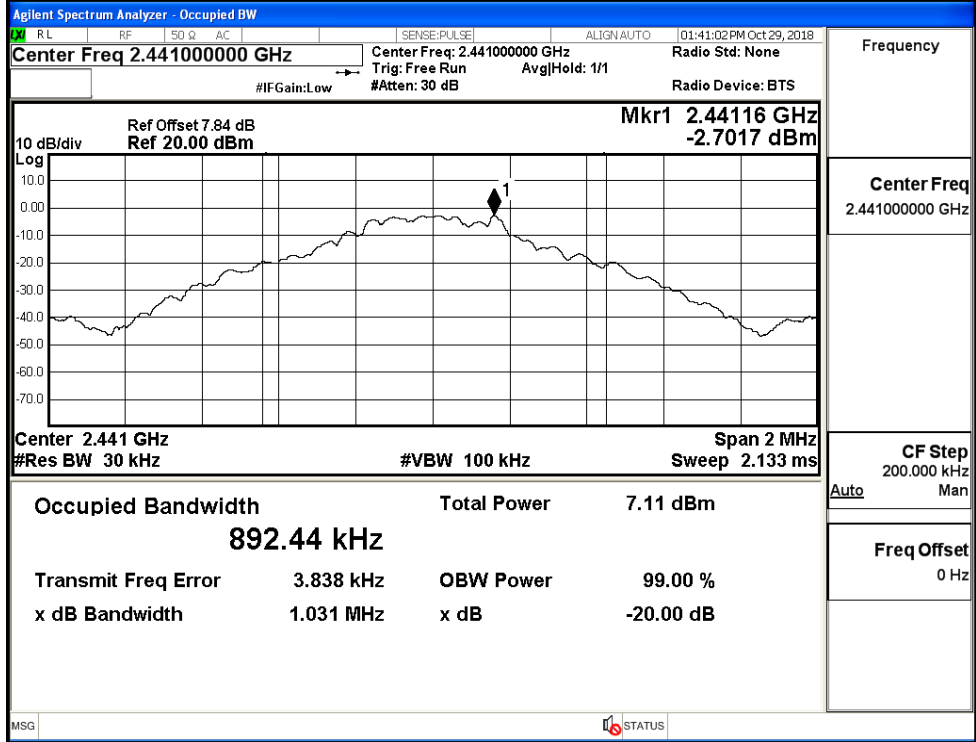
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.88800	1.034	Not Specified	PASS
	MCH	0.89244	1.031	Not Specified	PASS
	HCH	0.89477	0.9738	Not Specified	PASS
π/4DQPSK	LCH	1.1692	1.289	Not Specified	PASS
	MCH	1.1779	1.315	Not Specified	PASS
	HCH	1.1676	1.288	Not Specified	PASS
8DPSK	LCH	1.0756	1.141	Not Specified	PASS
	MCH	1.0738	1.144	Not Specified	PASS
	HCH	1.0733	1.144	Not Specified	PASS

Test Graphs

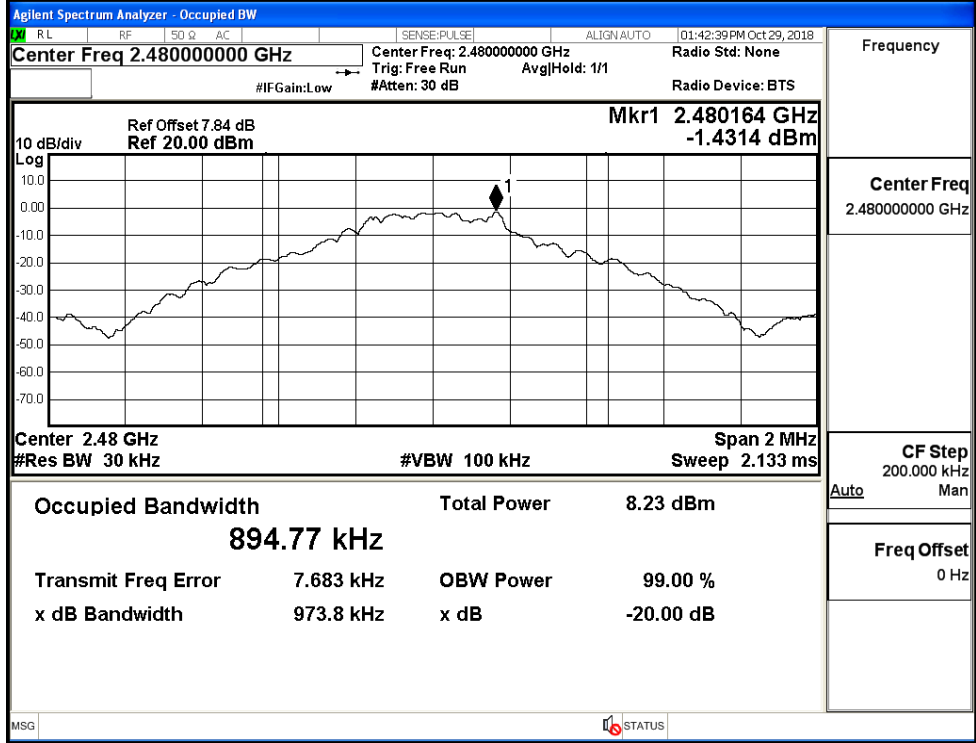


GFSK/MCH



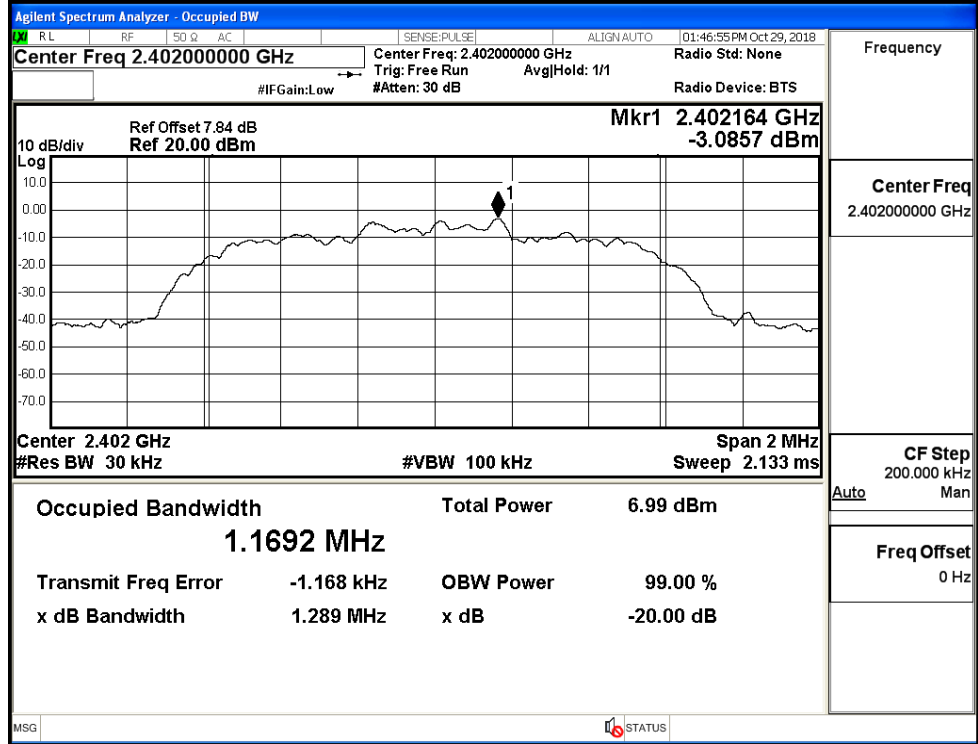
Frequency	2.44100000 GHz
Center Freq	2.44100000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH



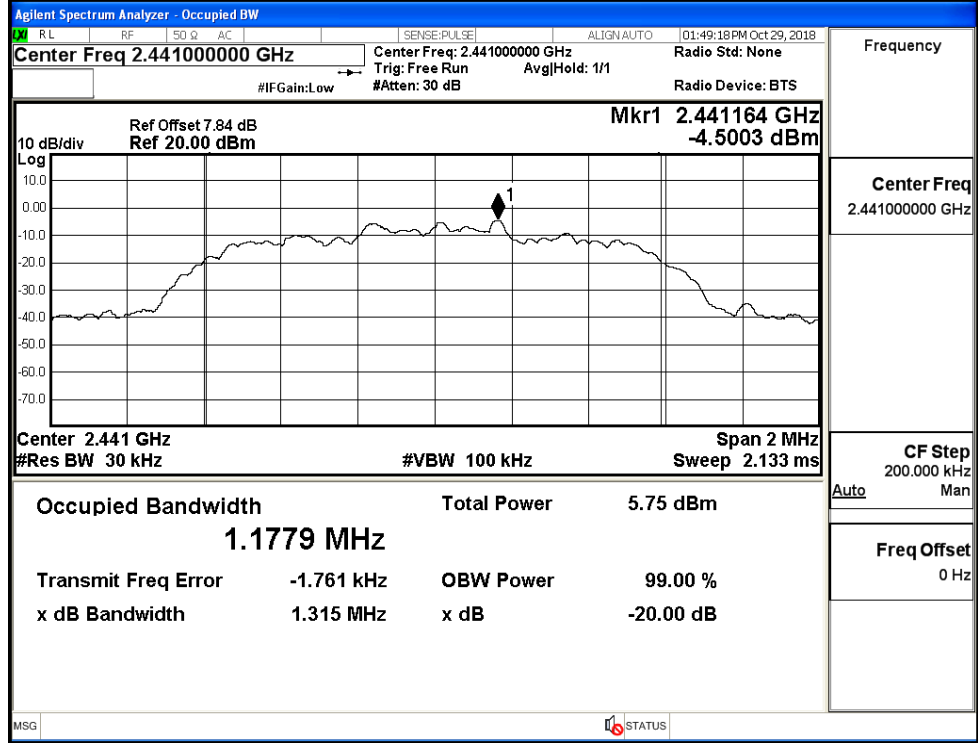
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

π /4DQPSK/LCH



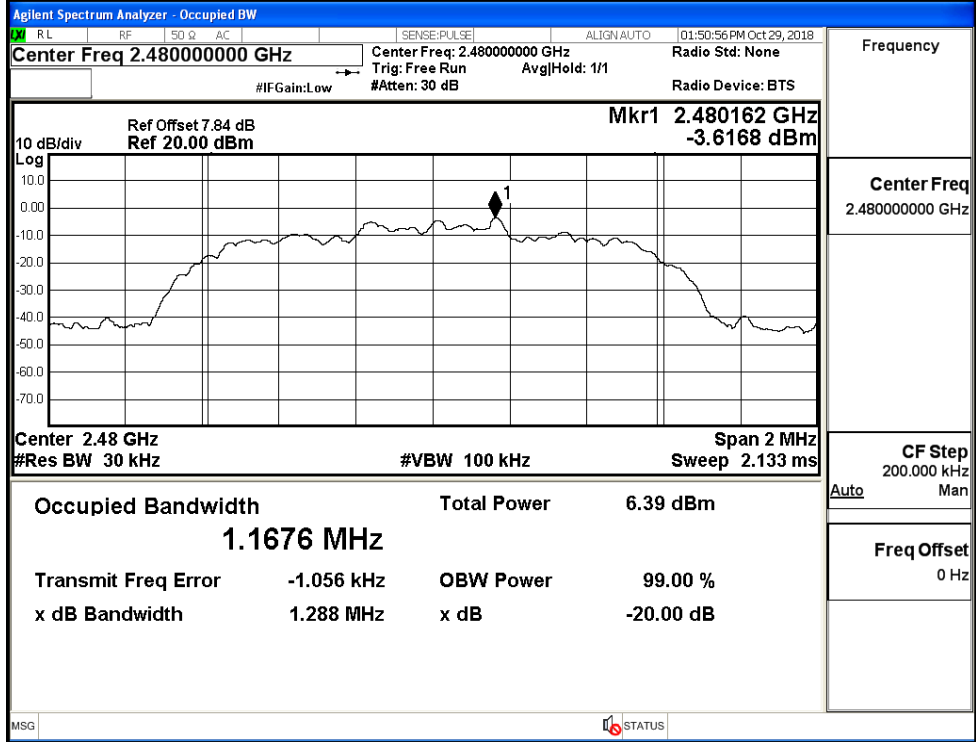
Frequency
Center Freq
2.40200000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

π /4DQPSK/MCH



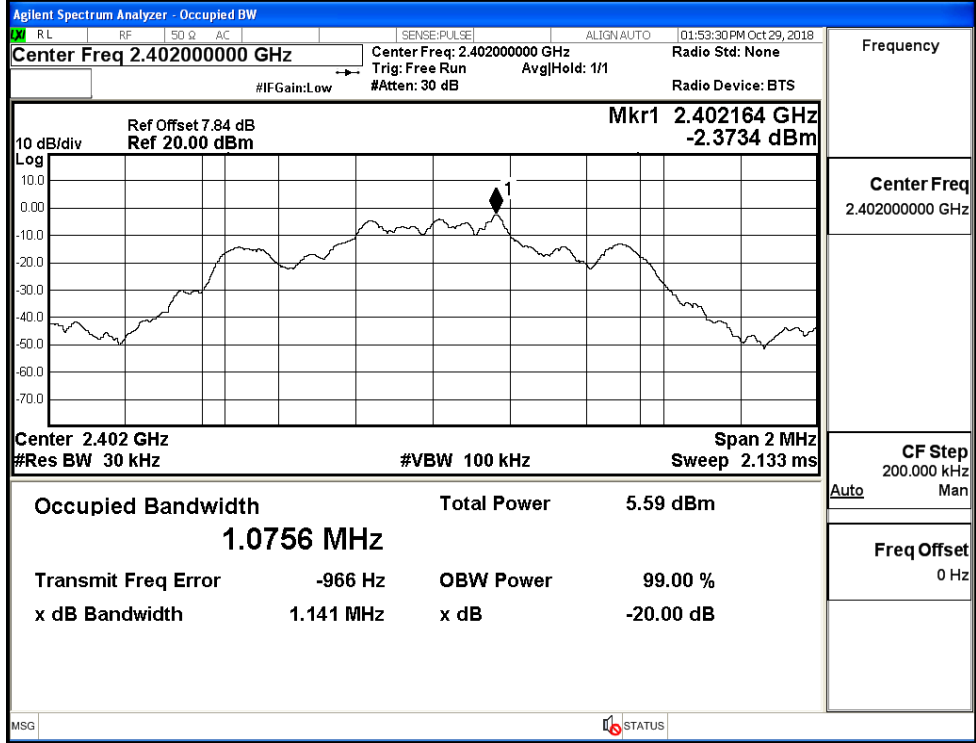
Frequency
Center Freq
2.44100000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

π/4DQPSK/HCH



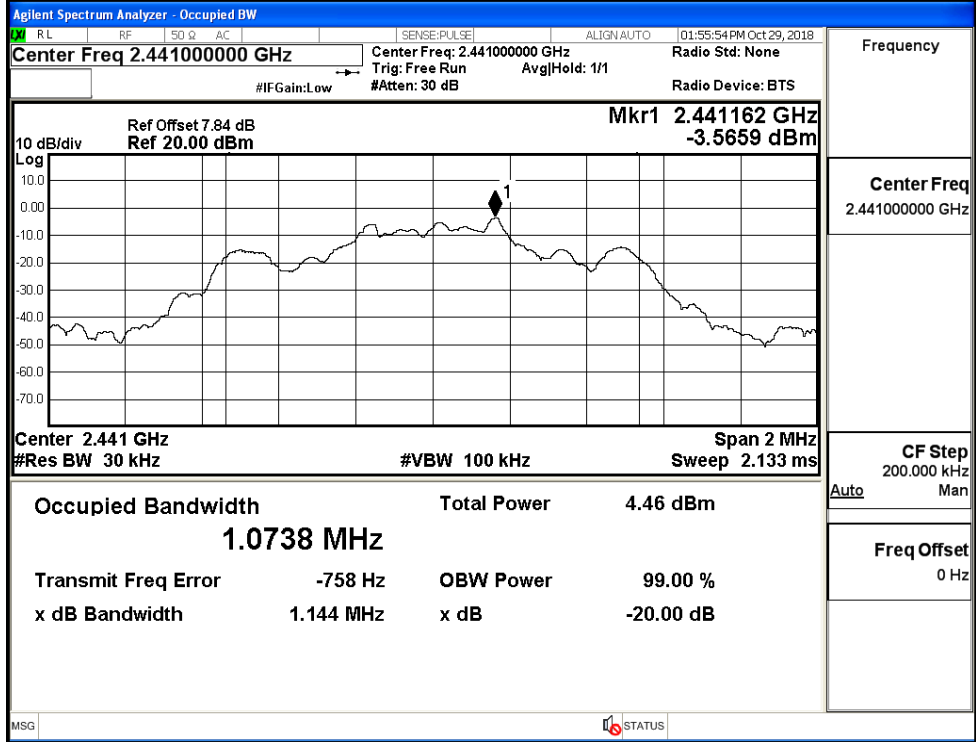
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH

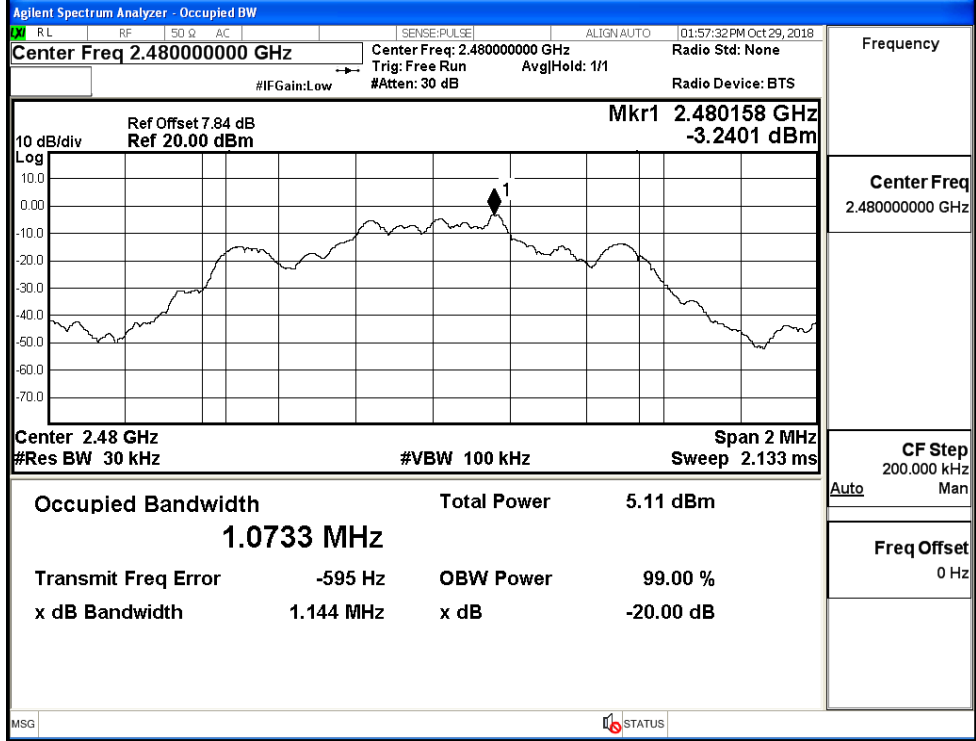


Frequency	2.40200000 GHz
Center Freq	2.40200000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/MCH

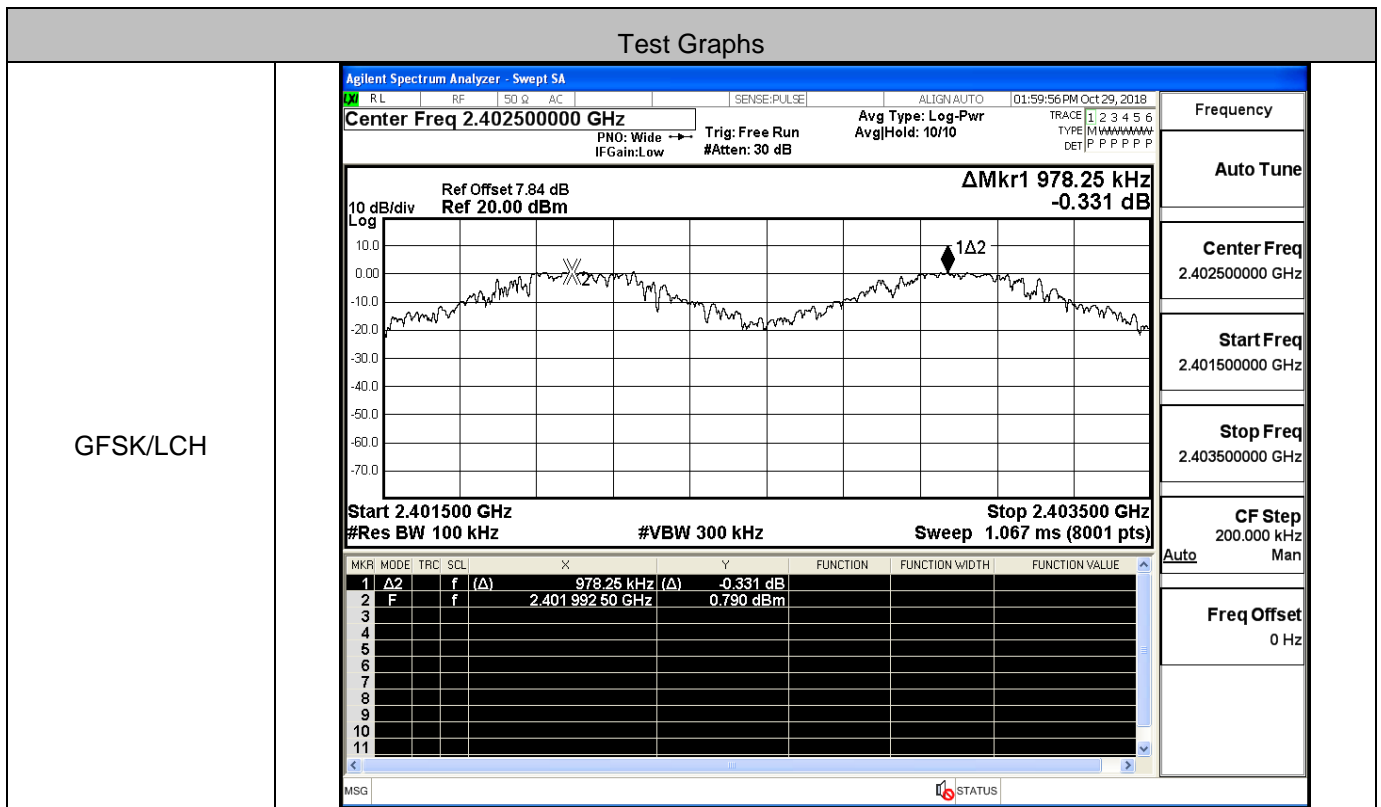


8DPSK/HCH

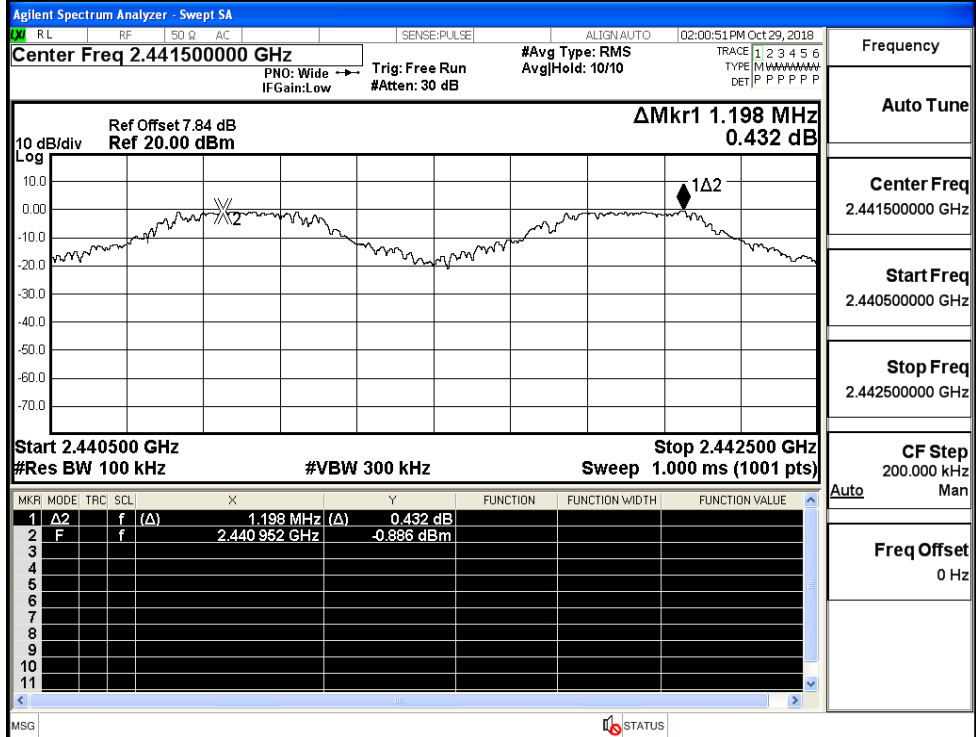


A.3 Carrier Frequency Separation

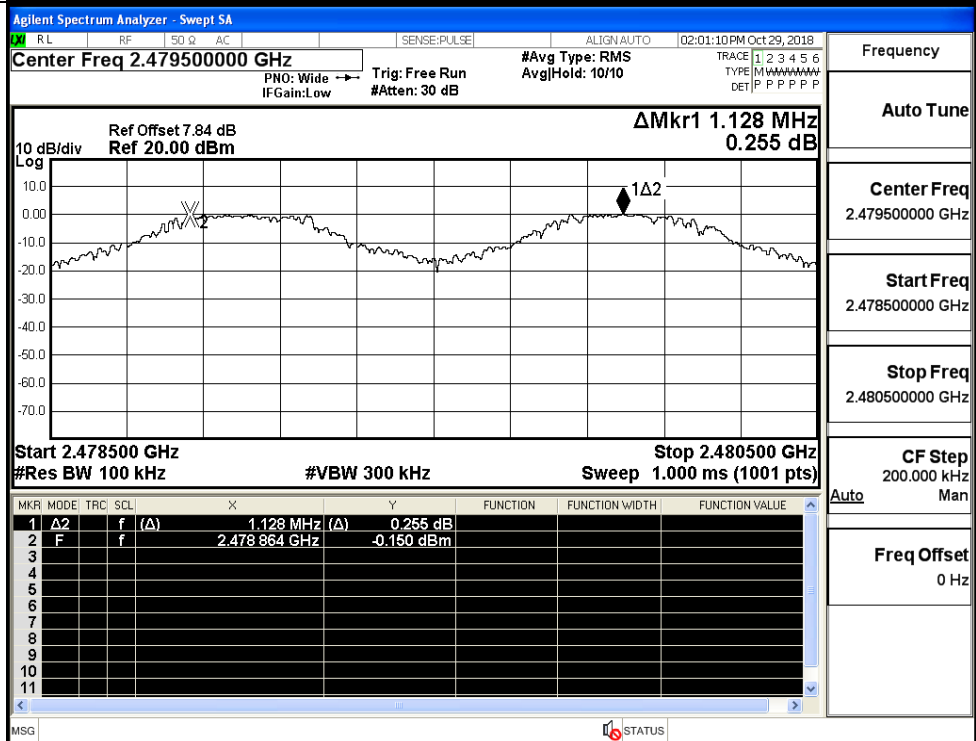
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.978	0.689	PASS
	MCH	1.198	0.689	PASS
	HCH	1.128	0.689	PASS
π/4DQPSK	LCH	1.138	0.877	PASS
	MCH	0.982	0.877	PASS
	HCH	0.988	0.877	PASS
8DPSK	LCH	1.056	0.763	PASS
	MCH	1.326	0.763	PASS
	HCH	0.804	0.763	PASS



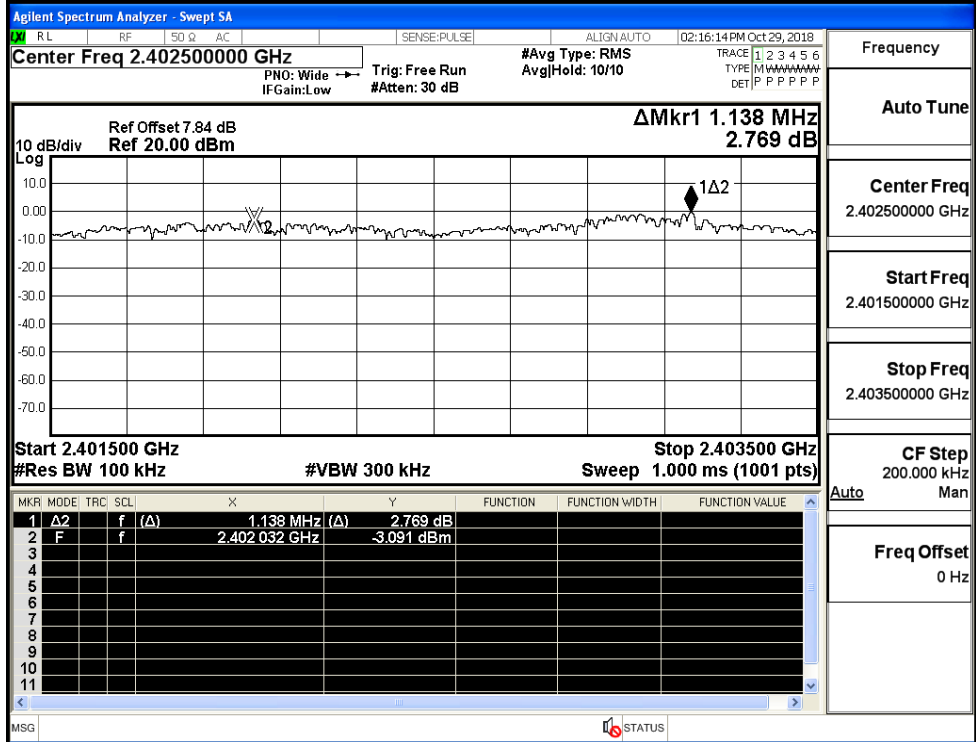
GFSK/MCH



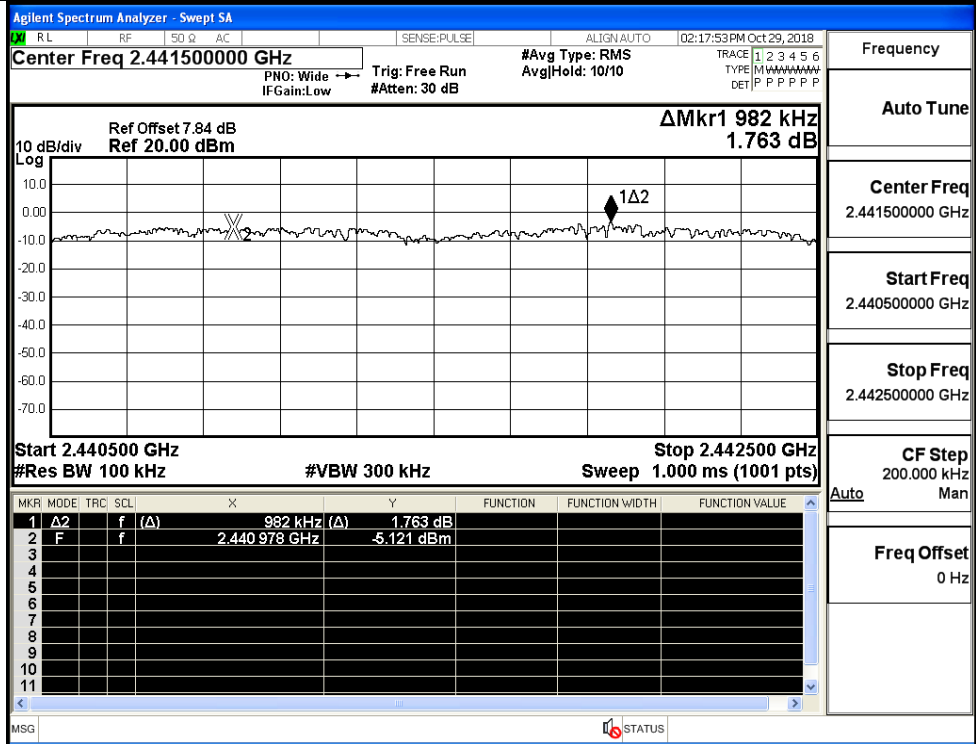
GFSK/HCH



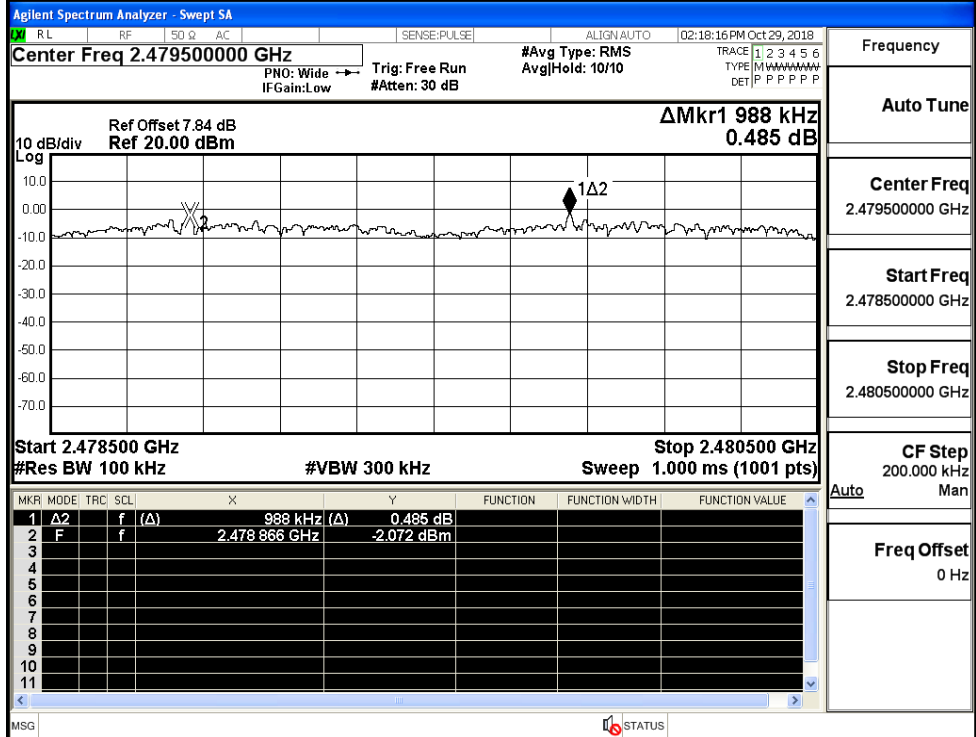
π /4DQPSK/LCH



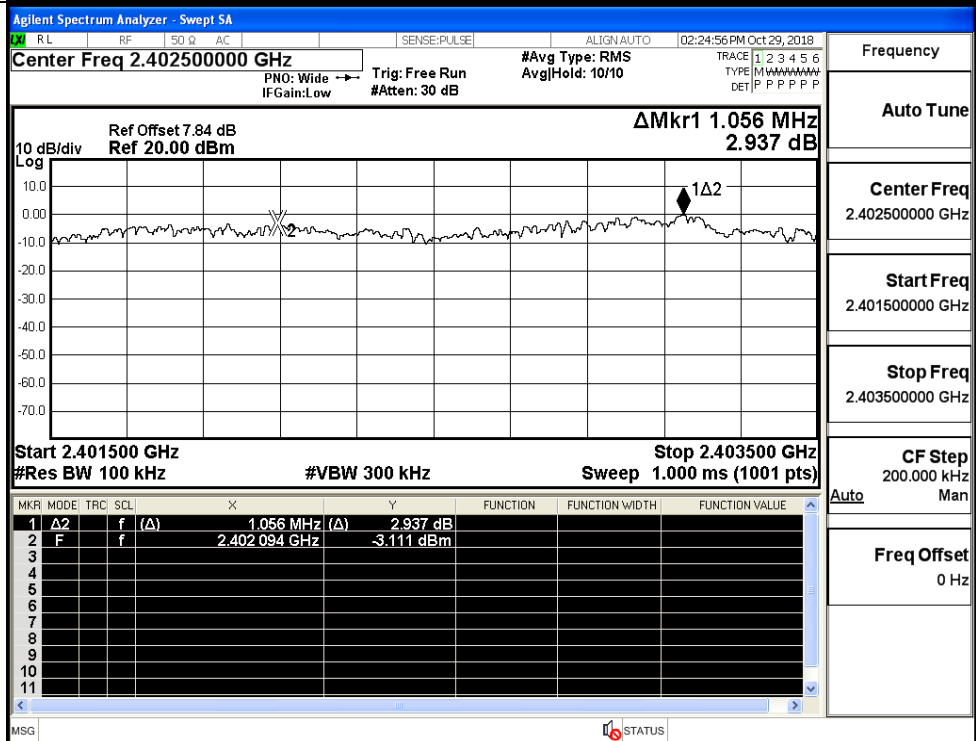
π /4DQPSK/MCH



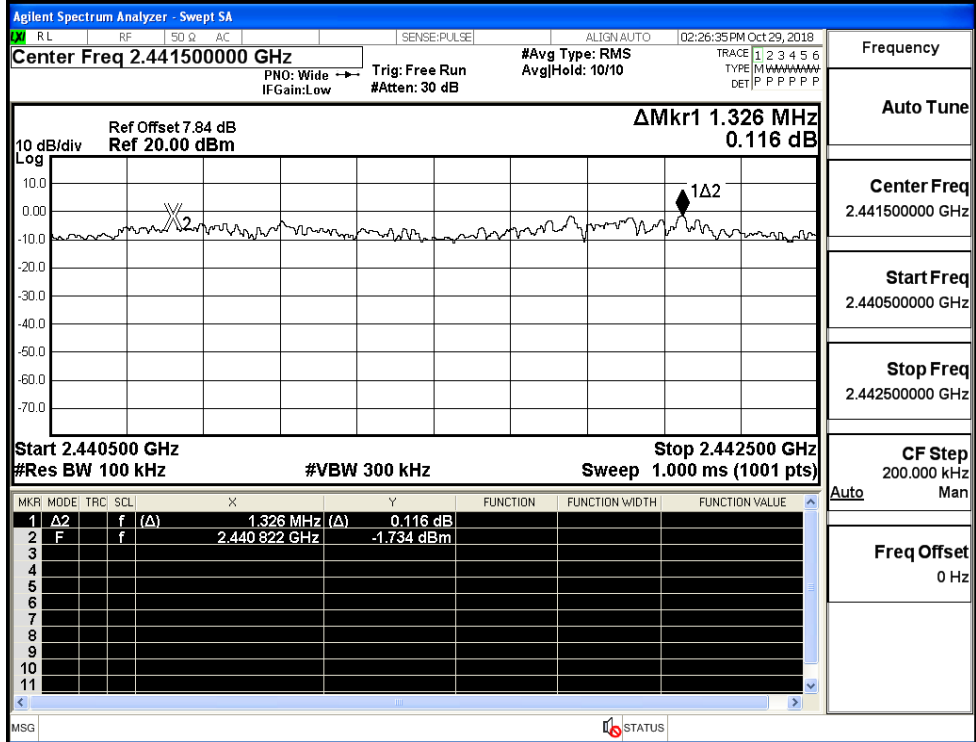
π/4DQPSK/HCH



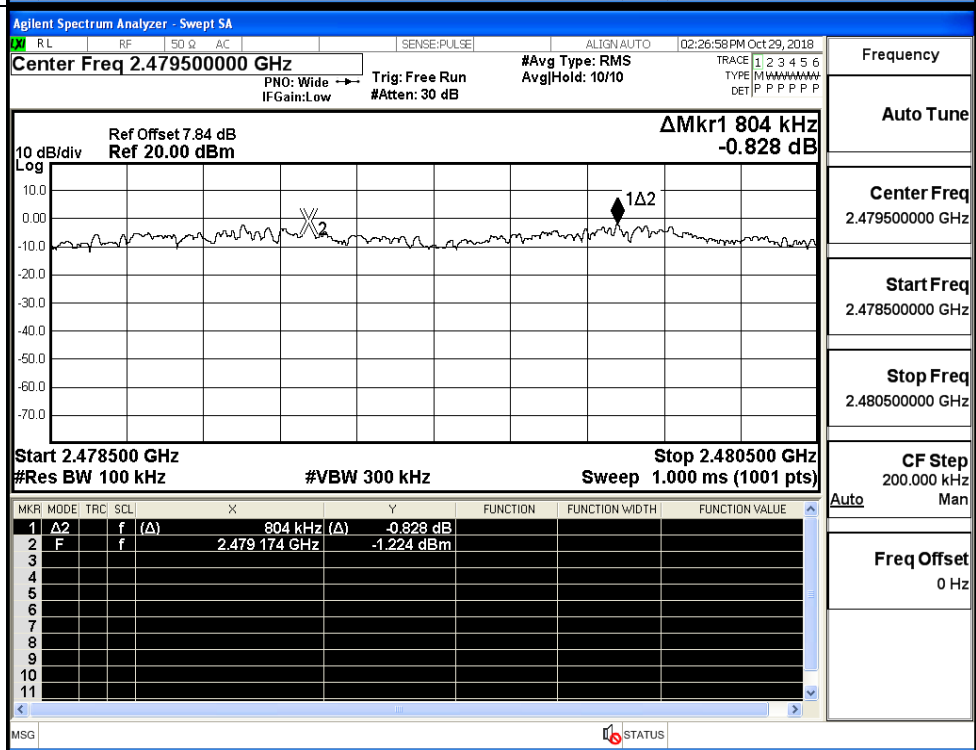
8DPSK/LCH



8DPSK/MCH

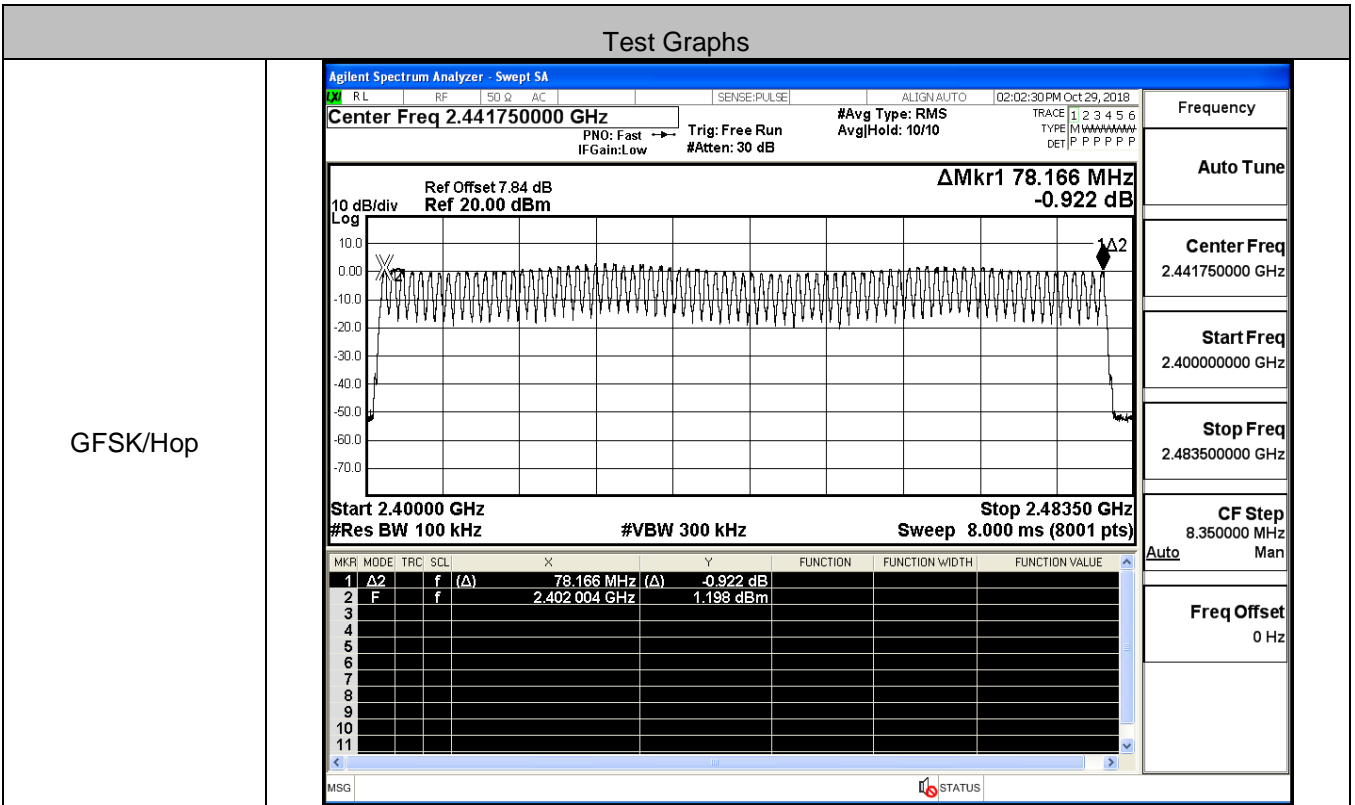


8DPSK/HCH

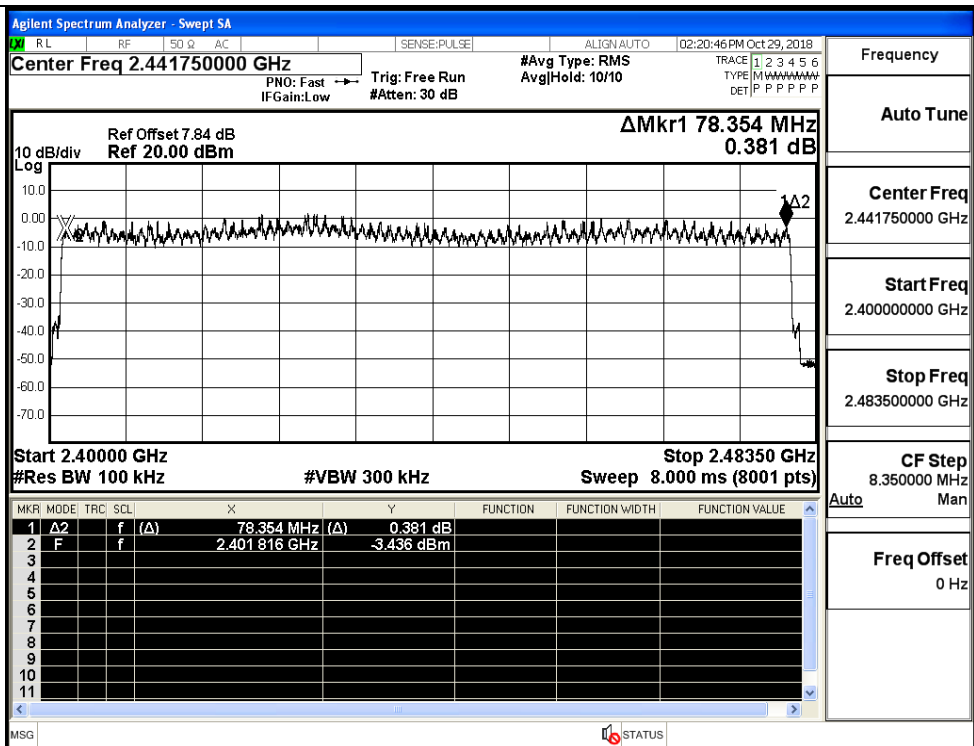


A.4 Hopping Channel Number

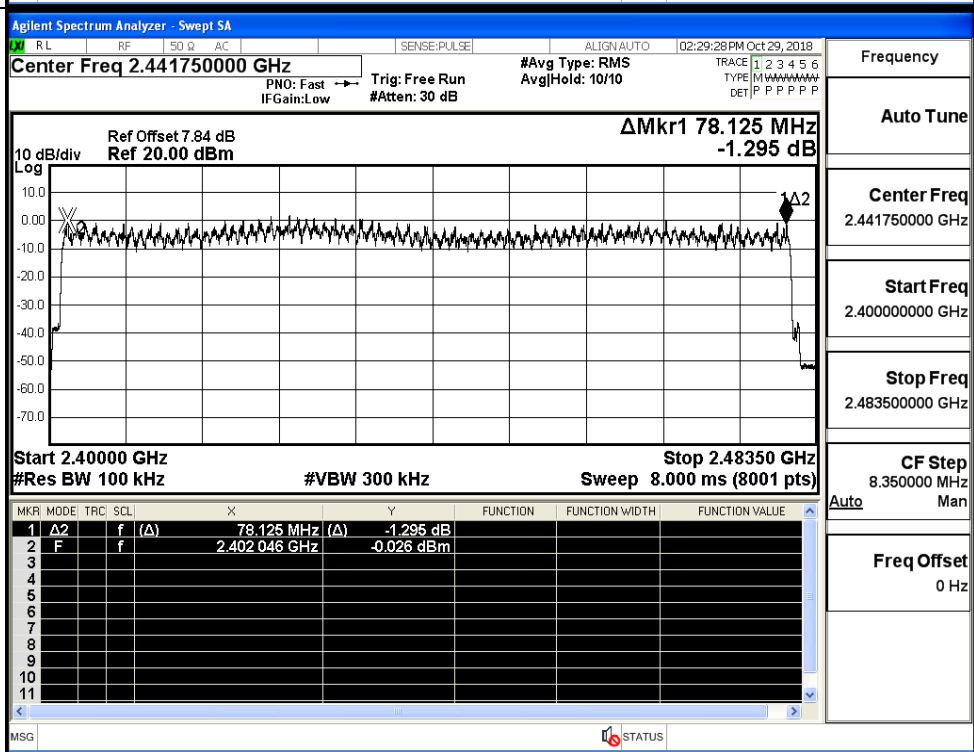
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS



$\pi/4$ DQPSK/Hop

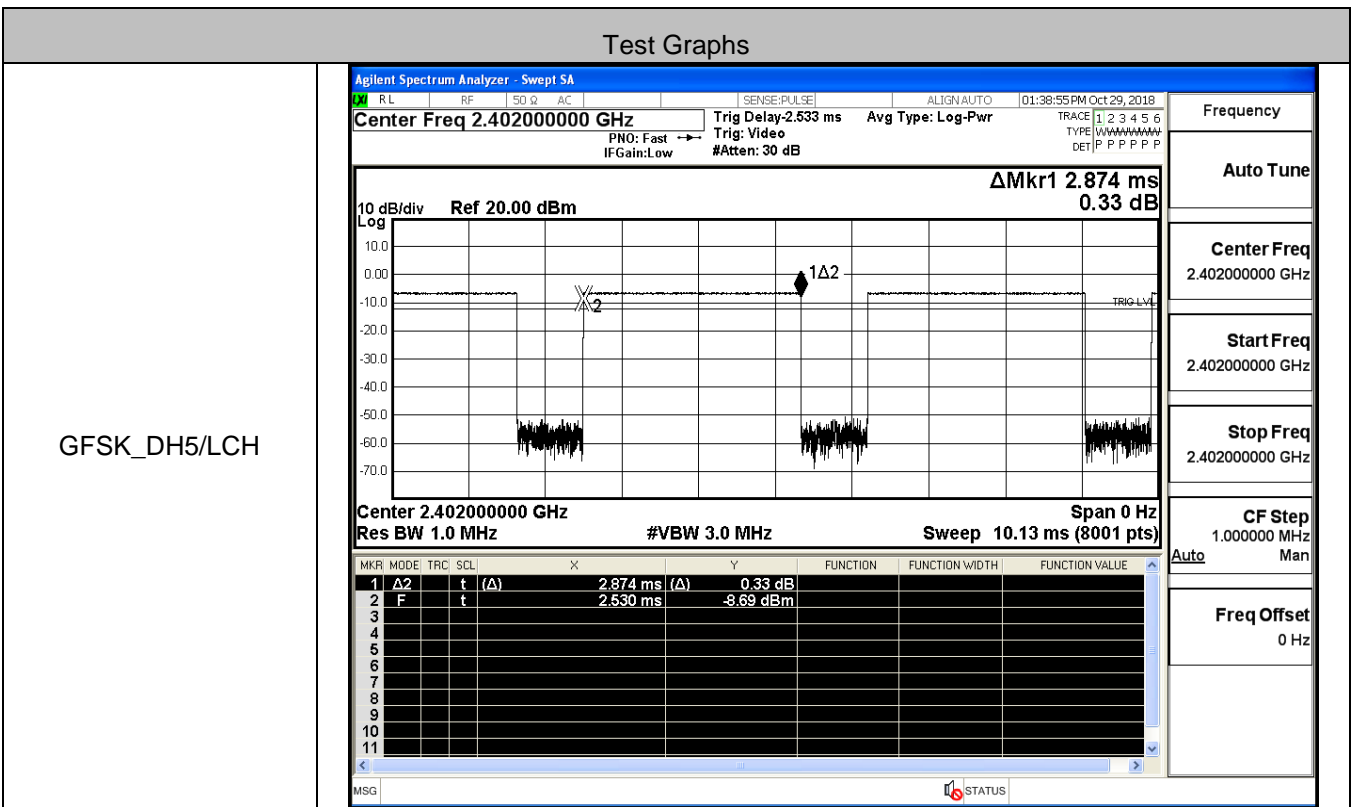


8DPSK/Hop

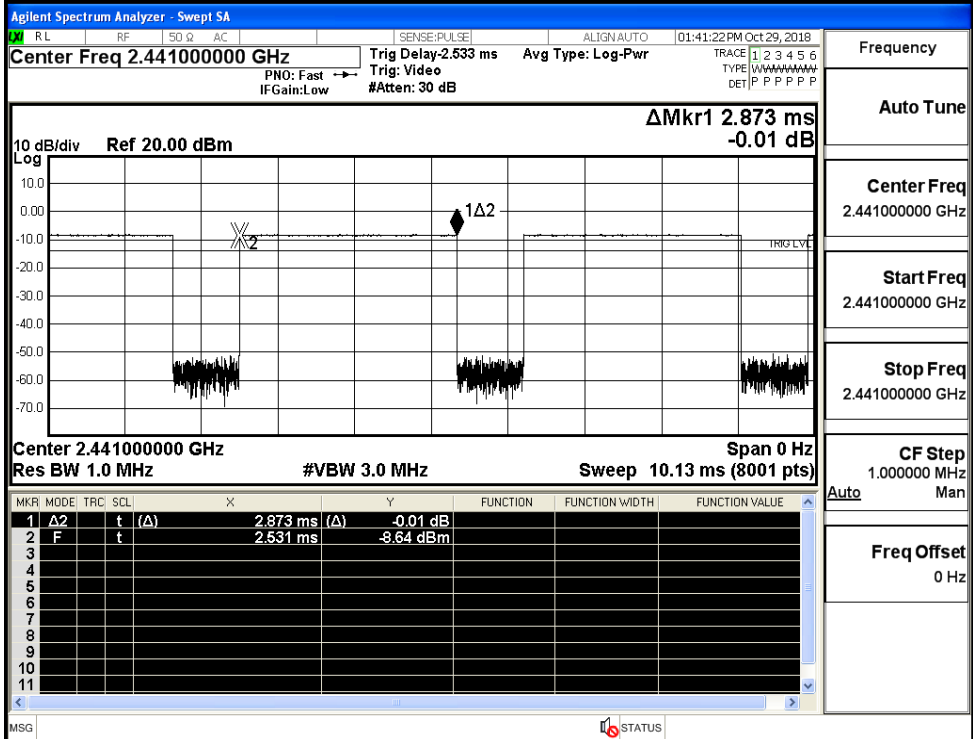


A.5 Dwell Time

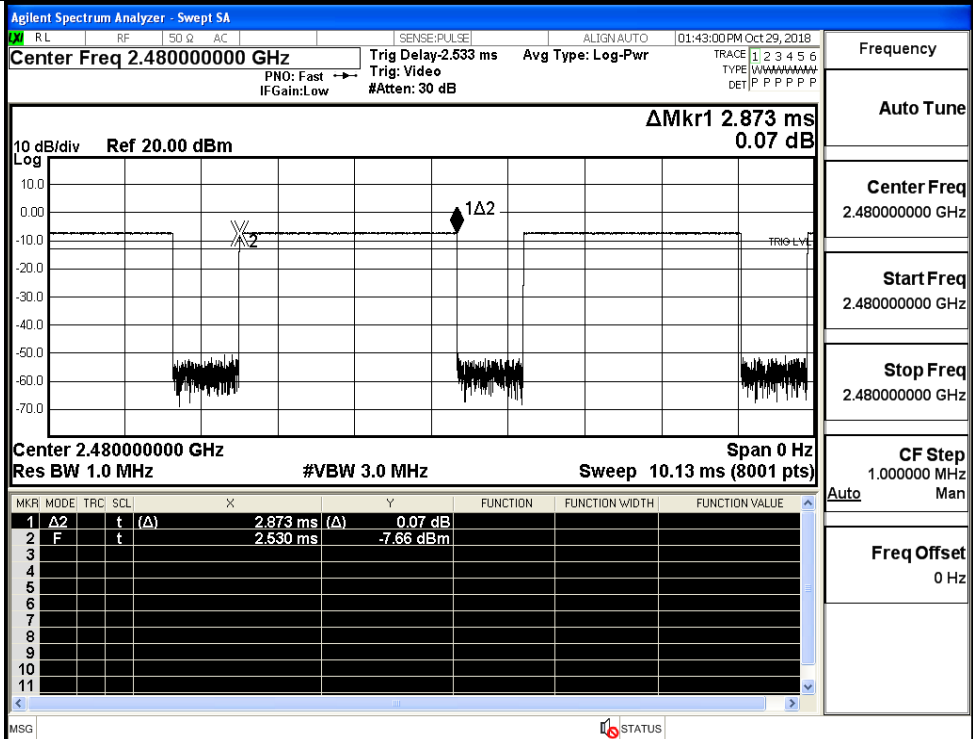
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.307	0.4	PASS
	3DH5	MCH	2.88	106.7	0.307	0.4	PASS
	3DH5	HCH	2.88	106.7	0.307	0.4	PASS



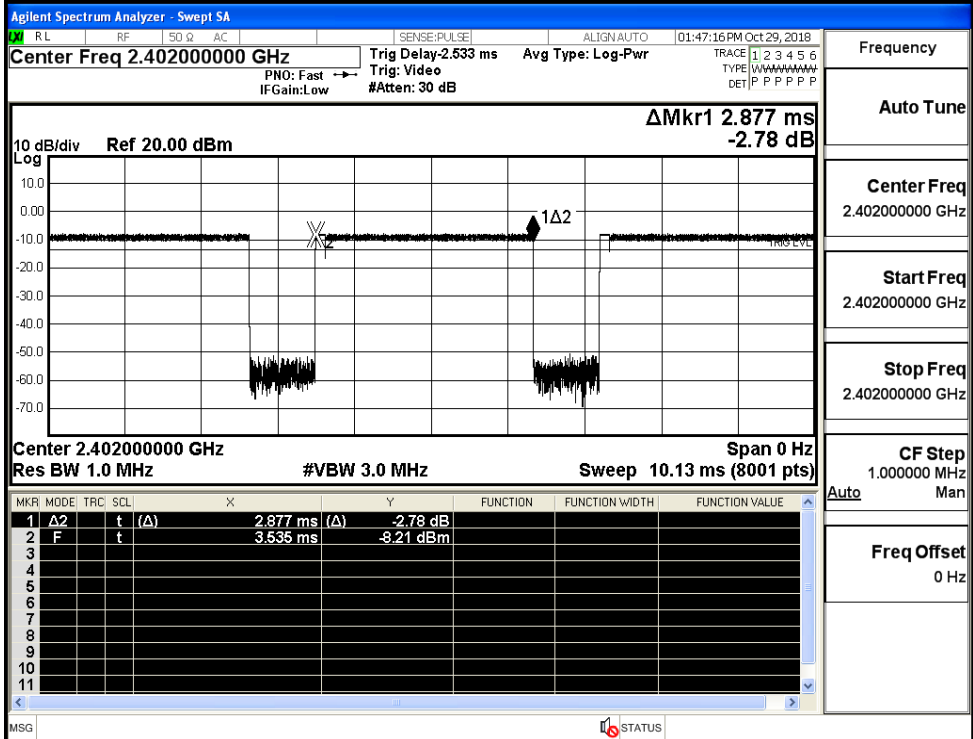
GFSK_DH5/MCH



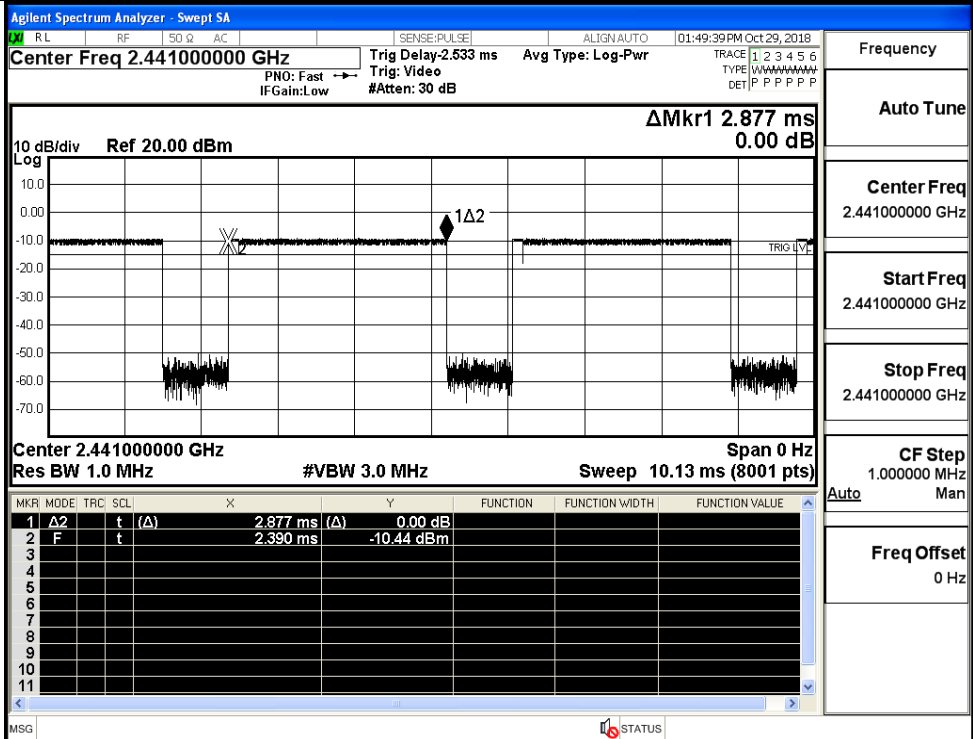
GFSK_DH5/HCH



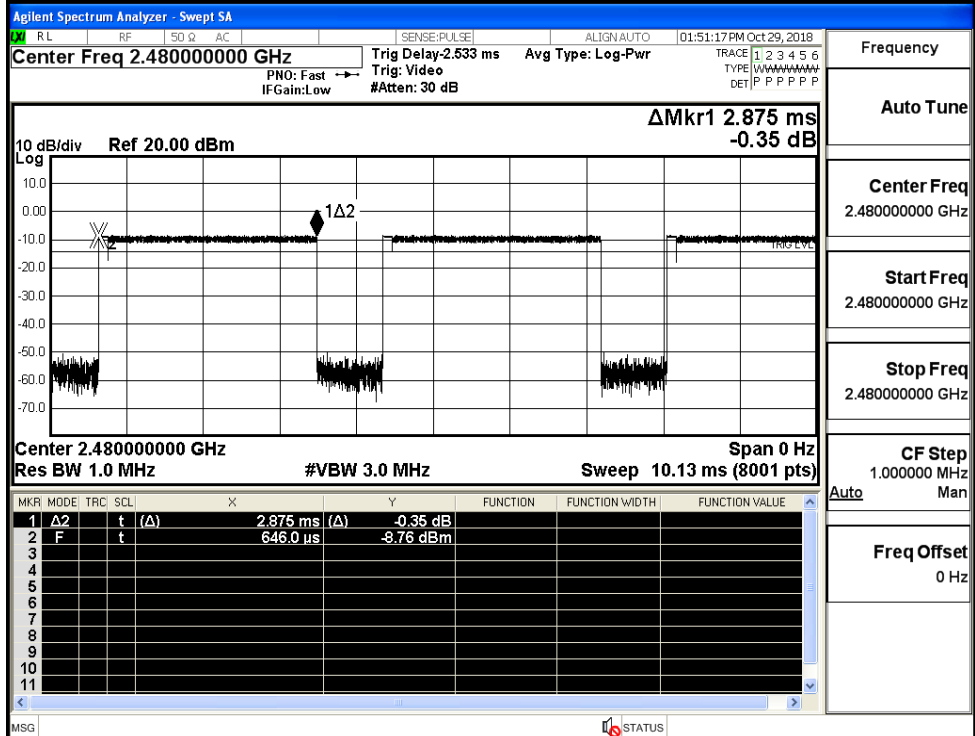
$\pi/4$ DQPSK
_2DH5/LCH



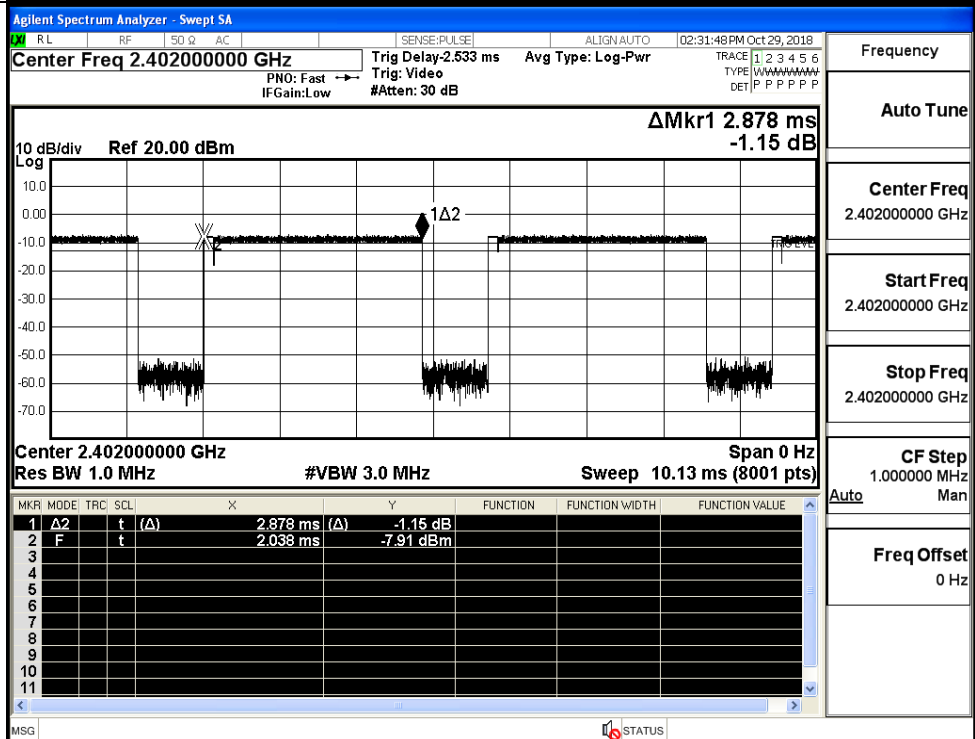
$\pi/4$ DQPSK
_2DH5/MCH



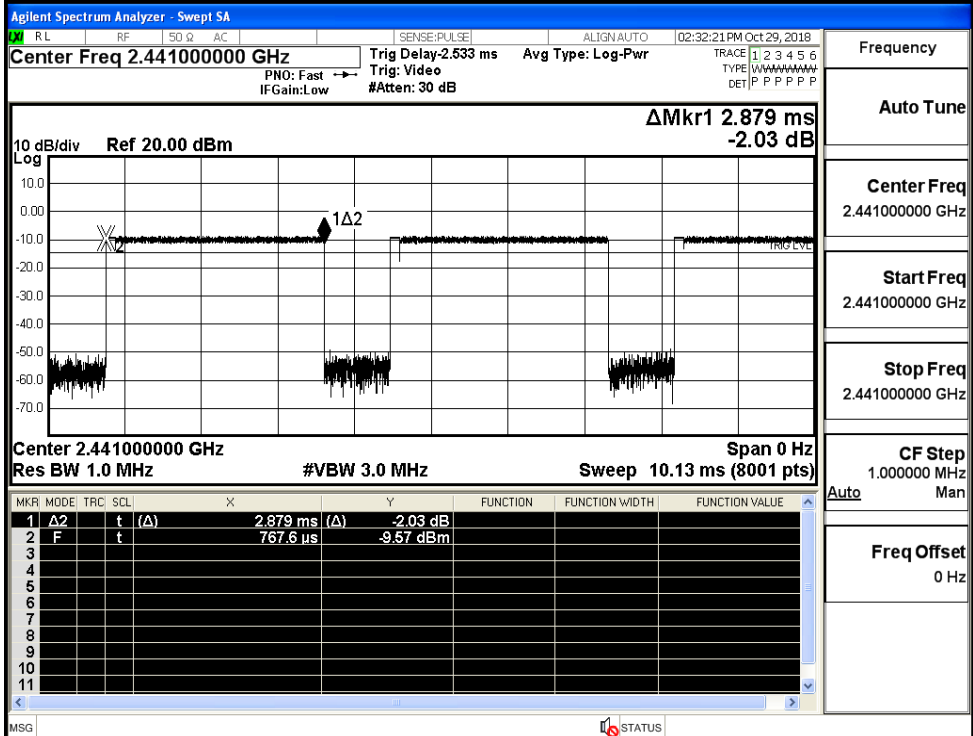
$\pi/4$ DQPSK
_2DH5/HCH



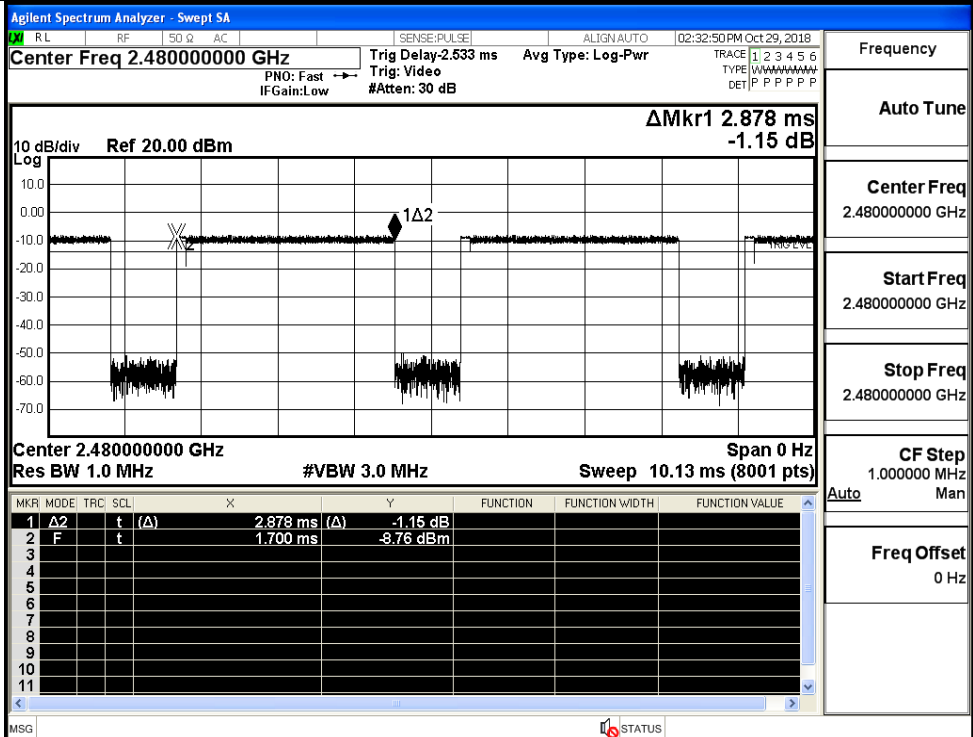
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

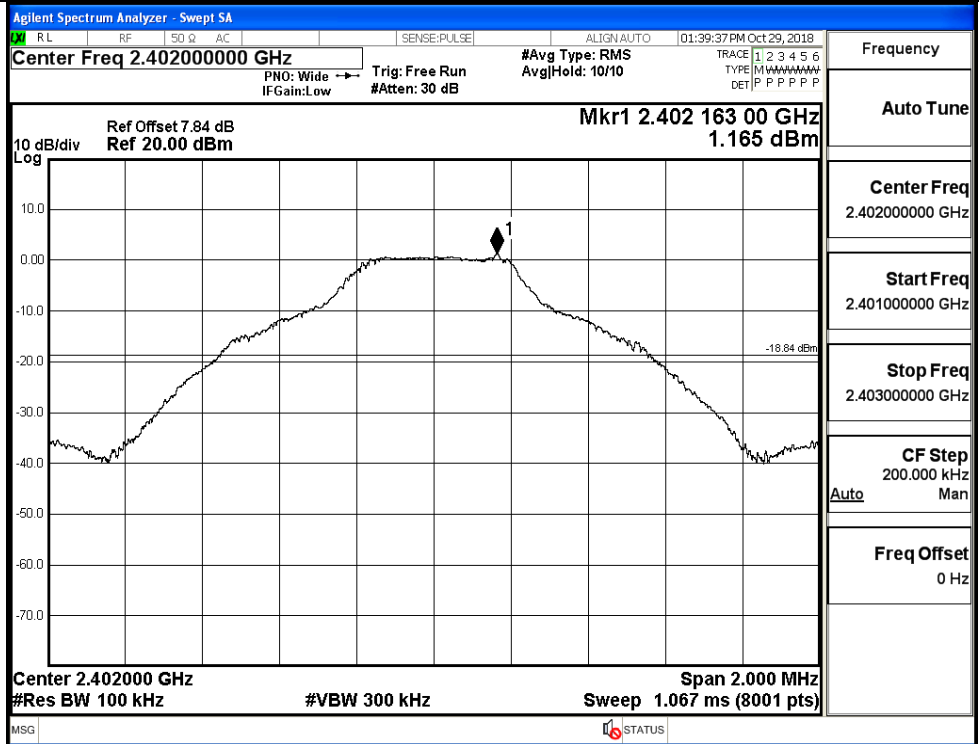


A.6 RF Conducted Spurious Emissions

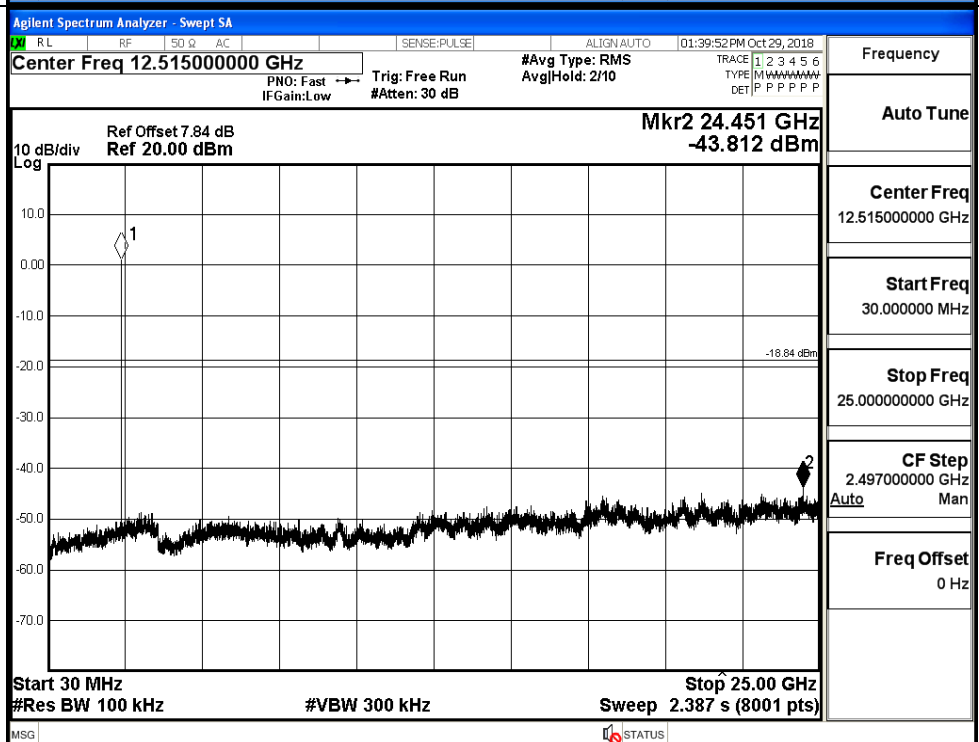
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.165	-43.812	-18.835	PASS
	MCH	-0.473	-44.626	-20.473	PASS
	HCH	0.504	-44.582	-19.496	PASS
$\pi/4$ DQPSK	LCH	-0.973	-45.268	-20.973	PASS
	MCH	-1.633	-44.915	-21.633	PASS
	HCH	-0.973	-44.500	-20.973	PASS
8DPSK	LCH	1.523	-45.175	-18.477	PASS
	MCH	0.816	-44.397	-19.184	PASS
	HCH	1.017	-44.608	-18.983	PASS

GFSK_LCH_Graphs

Pref

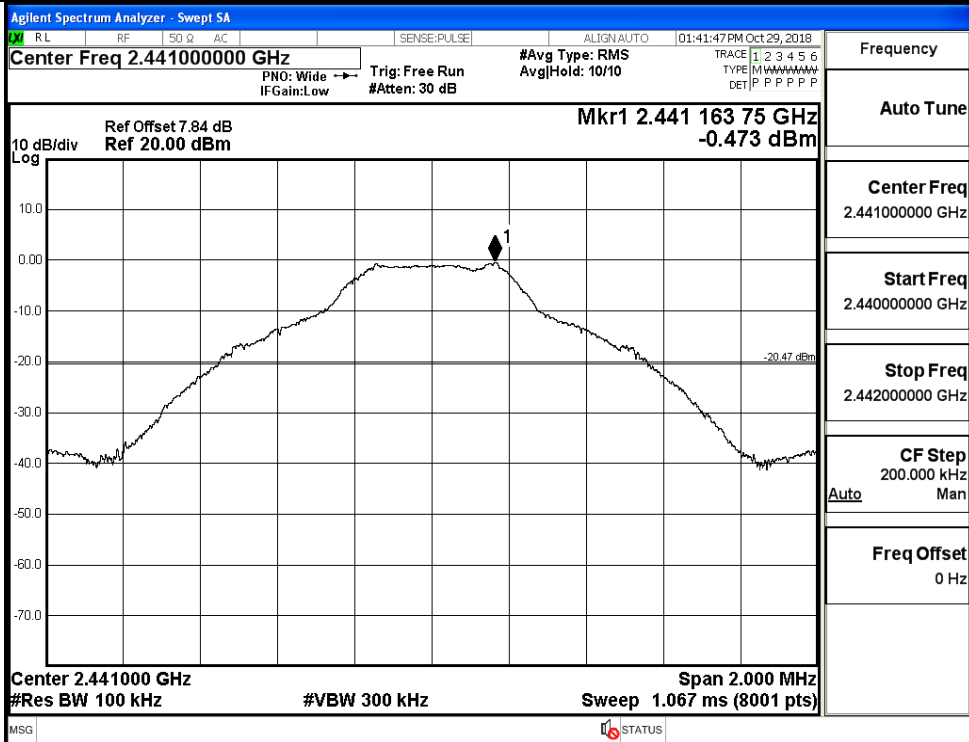


Puw

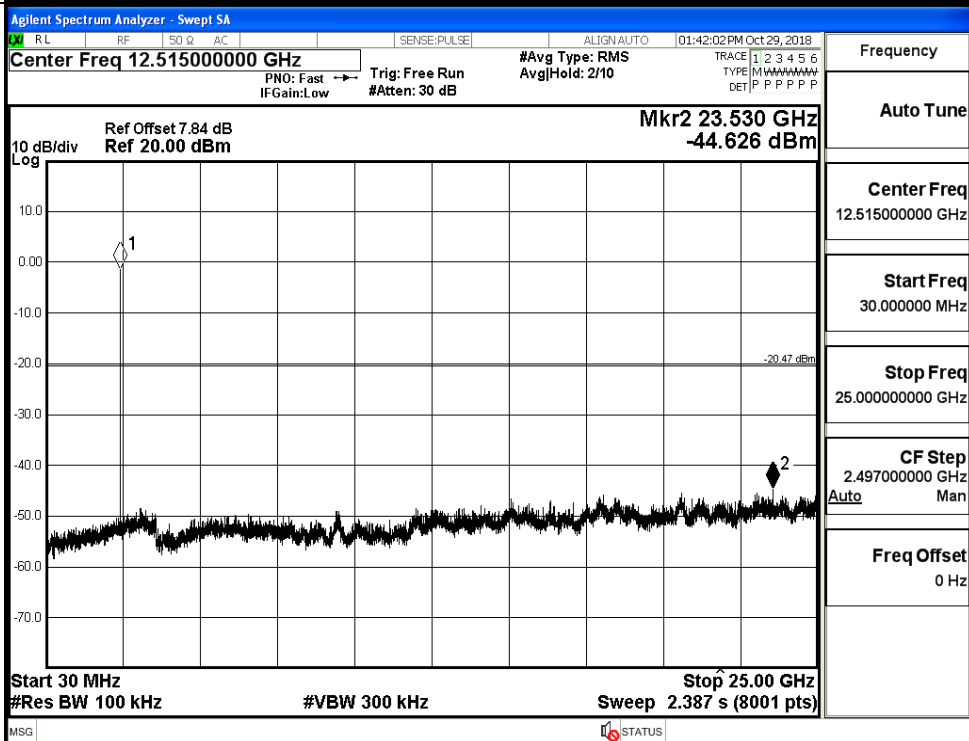


GFSK_MCH_Graphs

Pref

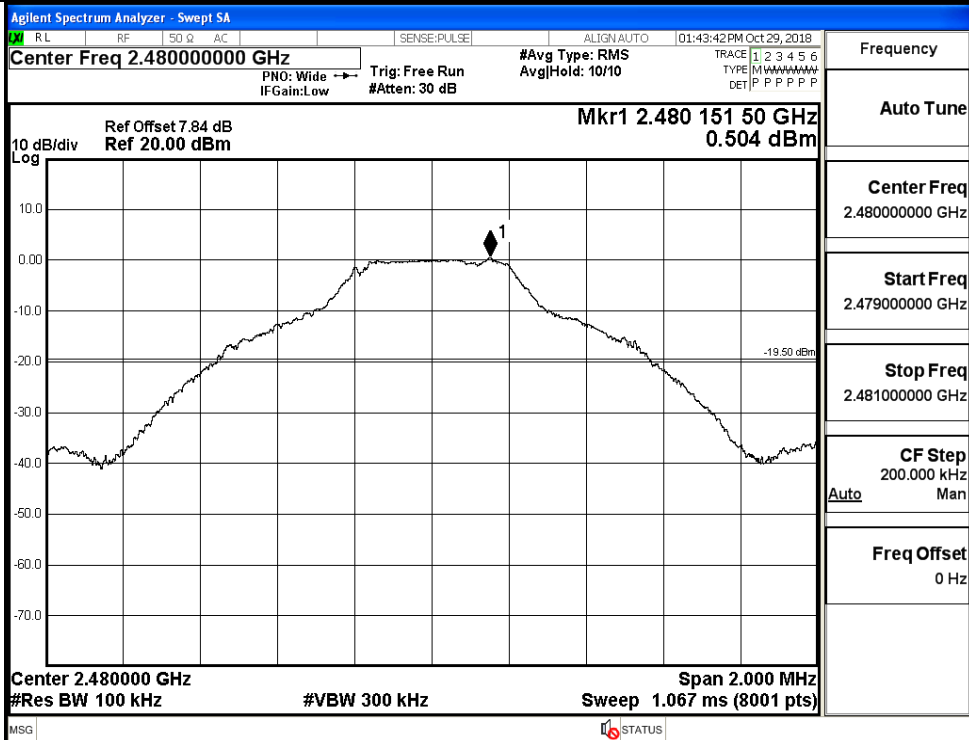


Puw

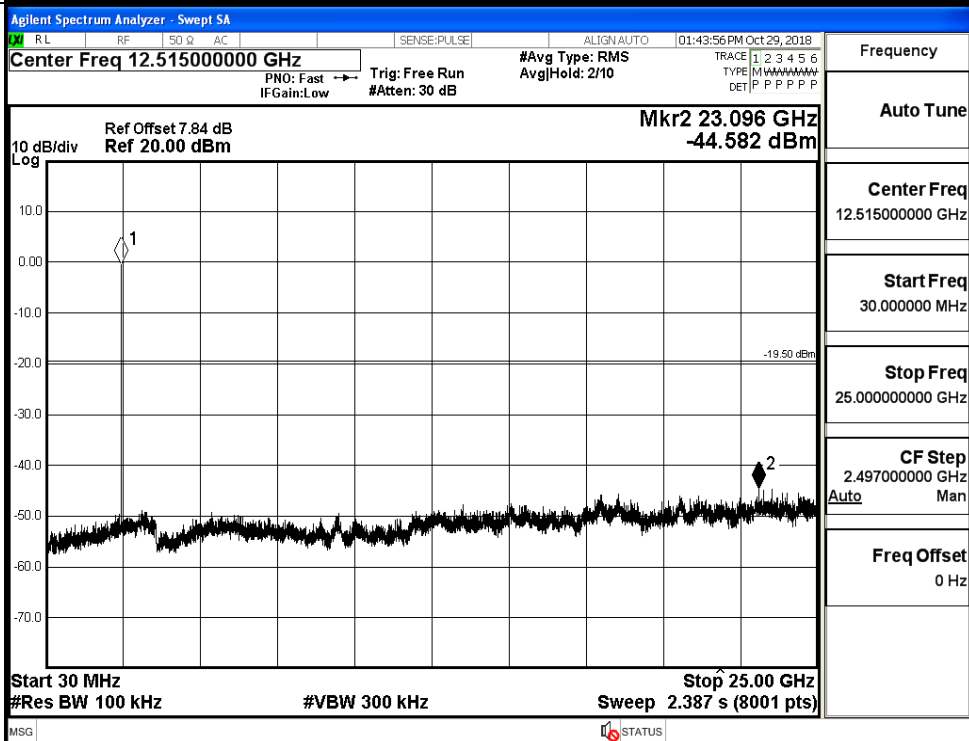


GFSK_HCH_Graphs

Pref

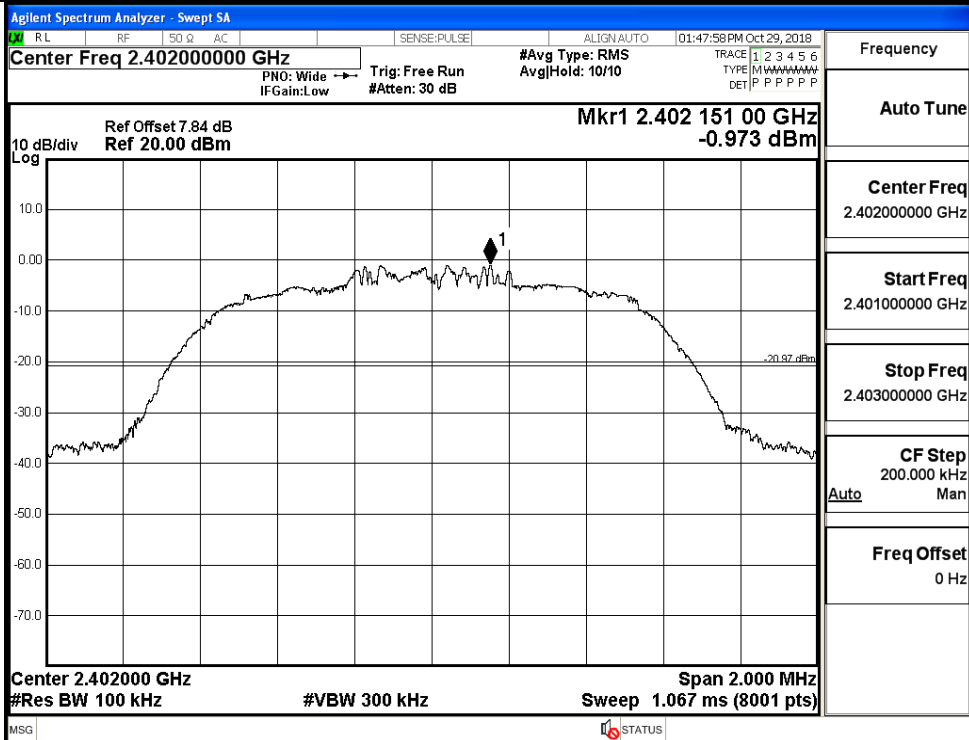


Puw

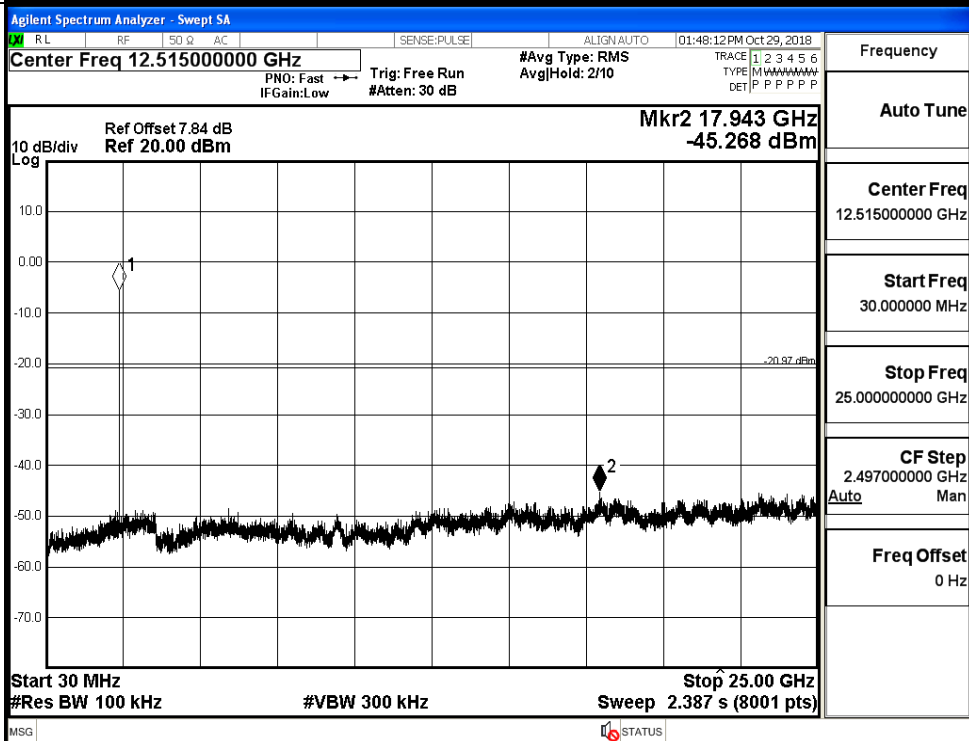


$\pi/4$ DQPSK LCH Graphs

Pref

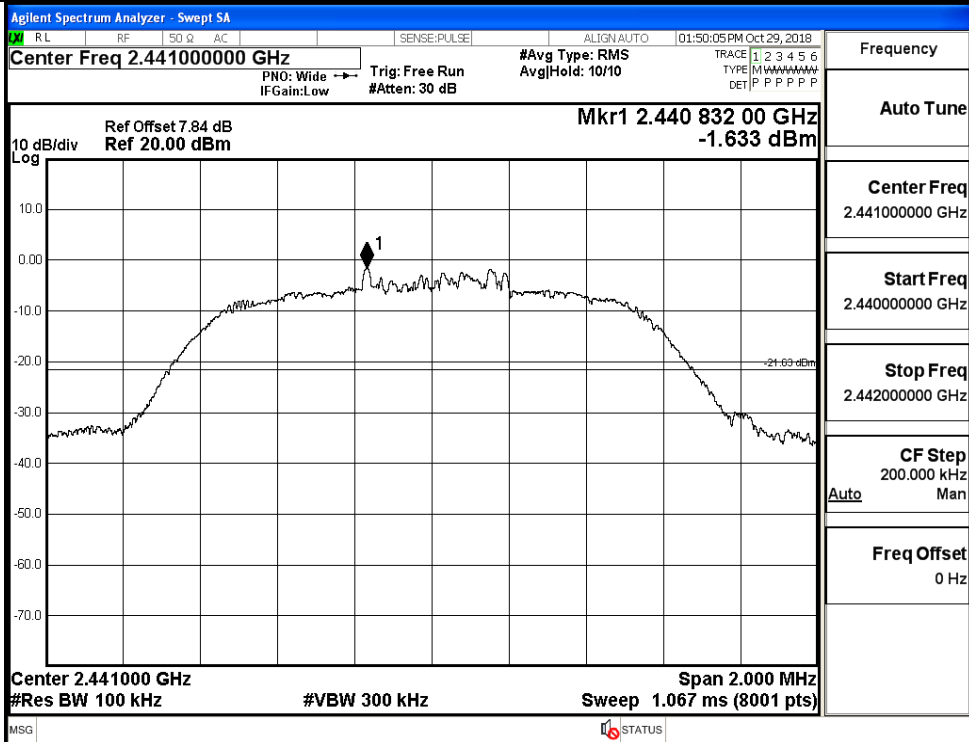


Puw

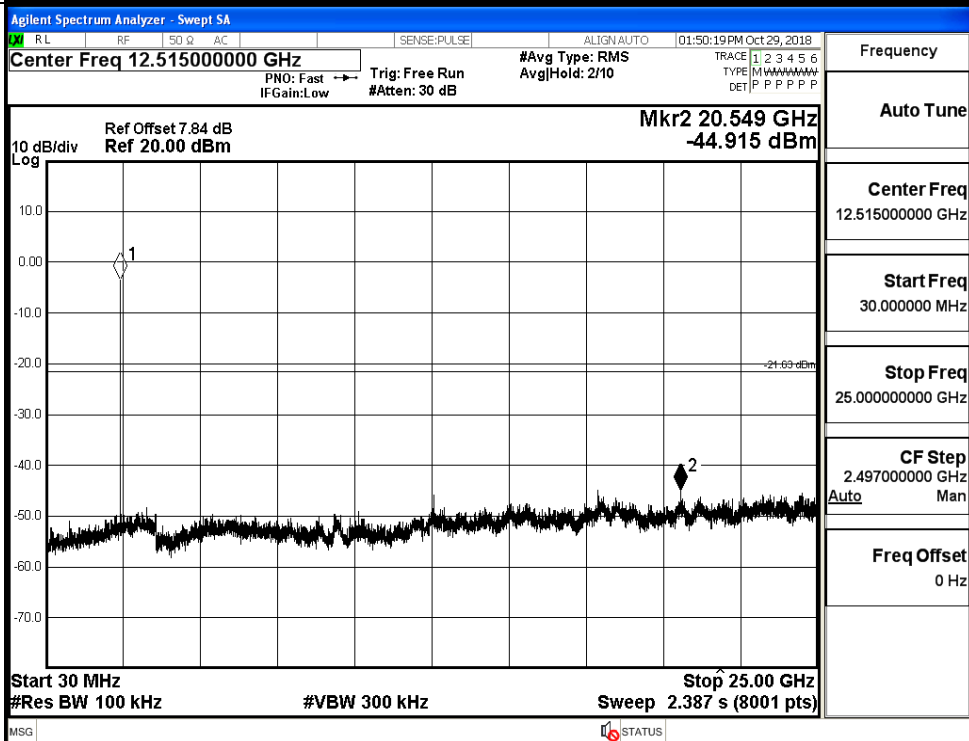


π/4DQPSK MCH Graphs

Pref

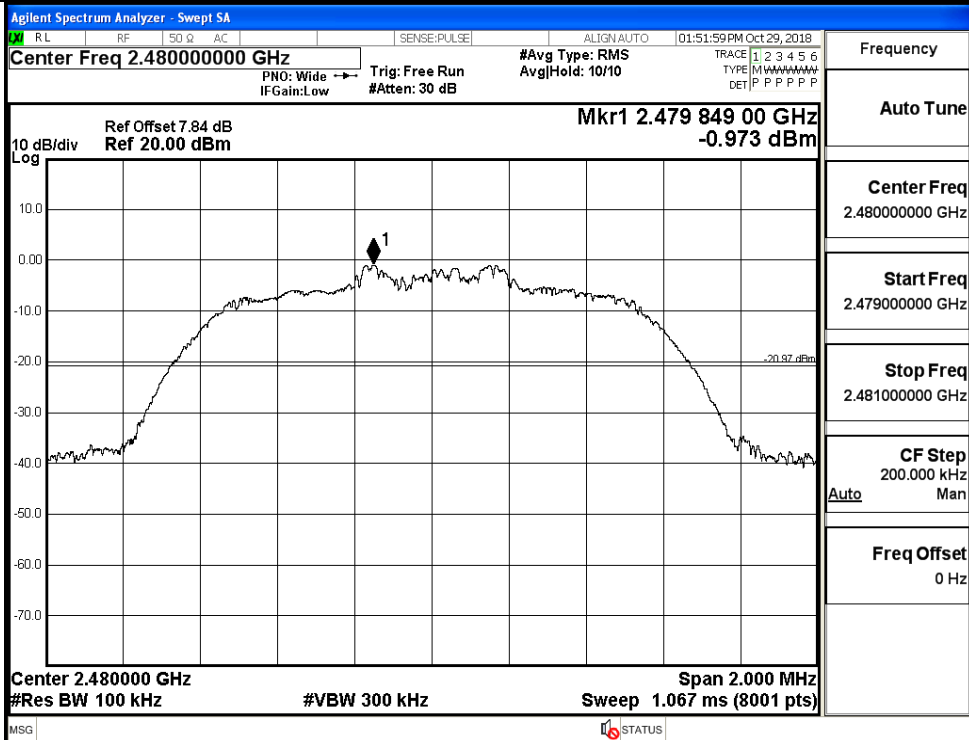


Puw

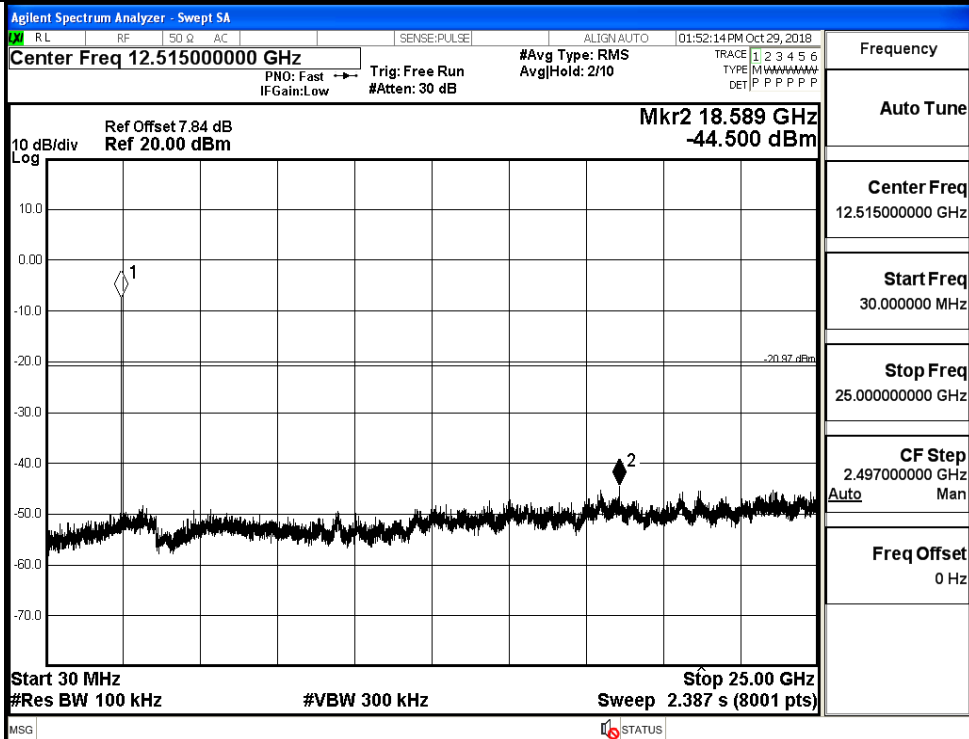


$\pi/4$ DQPSK HCH_Graphs

Pref

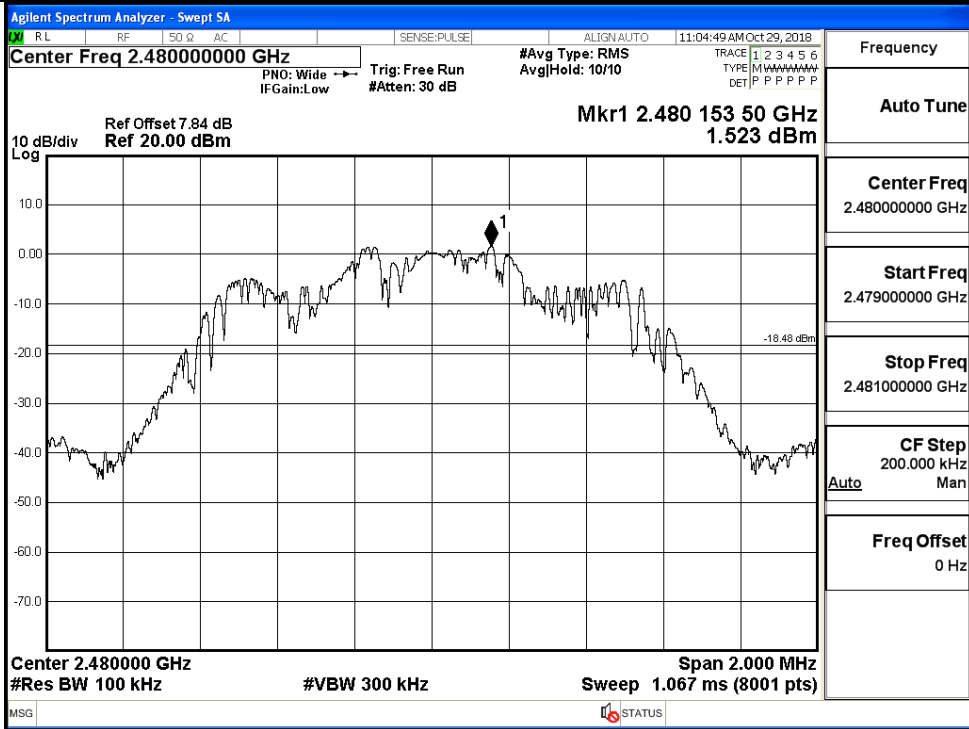


Puw

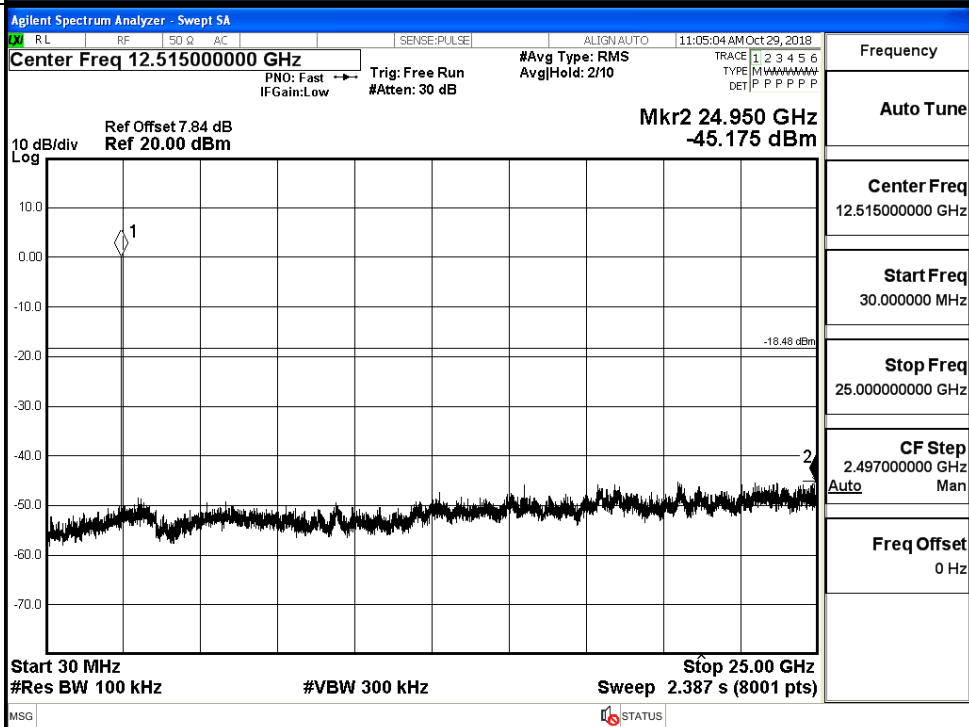


8DPSK_LCH_Graphs

Pref

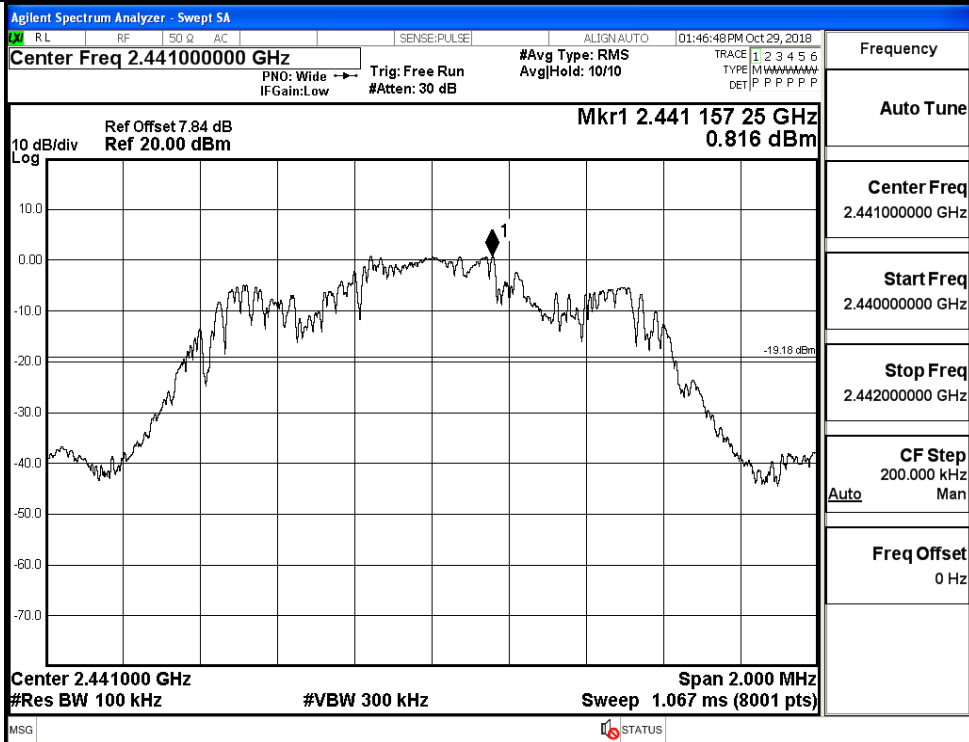


Puw

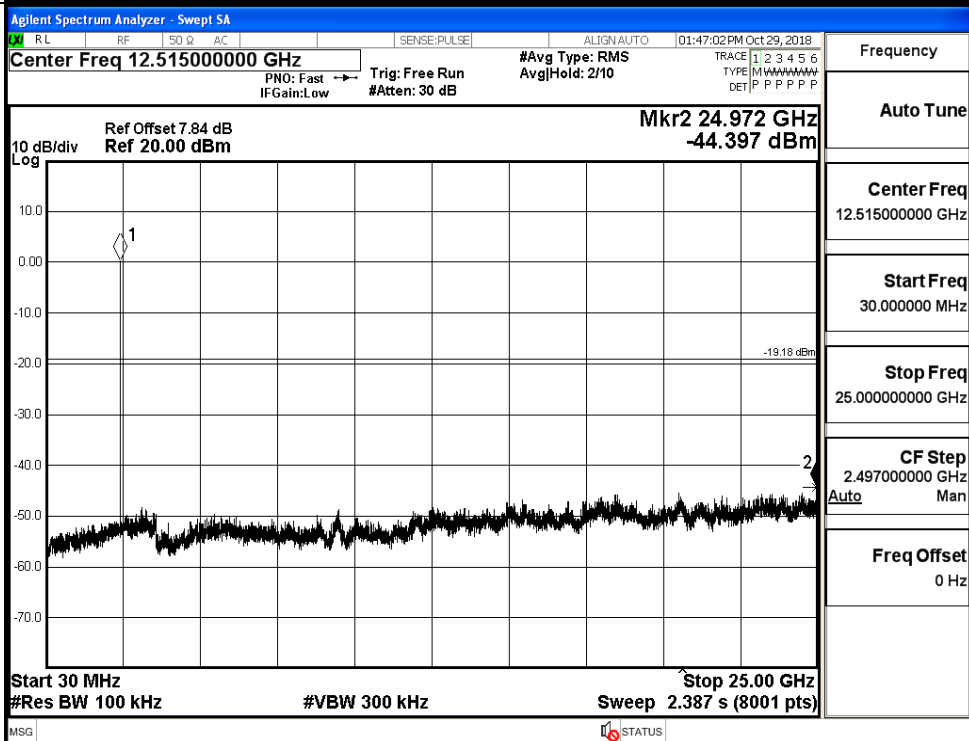


8DPSK_MCH_Graphs

Pref

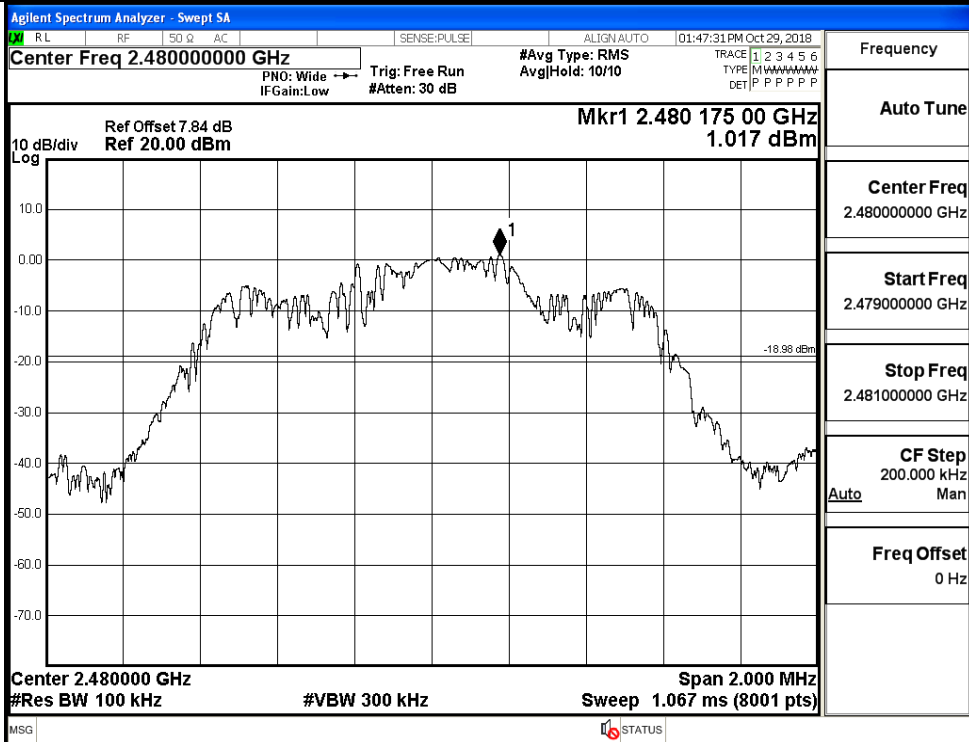


Puw

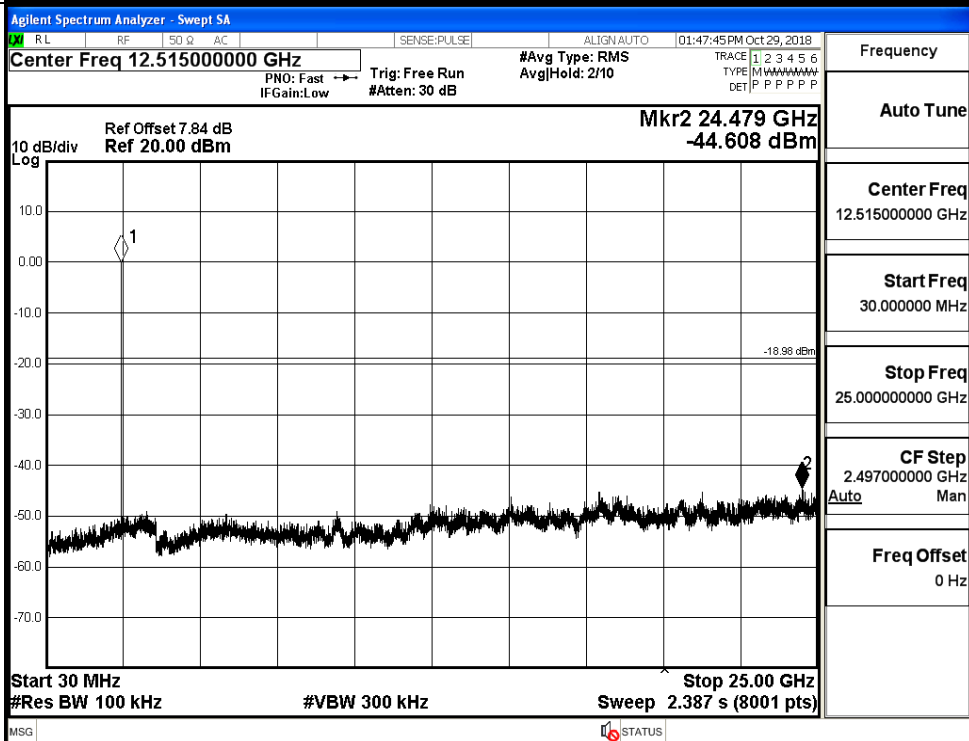


8DPSK_HCH_Graphs

Pref



Puw

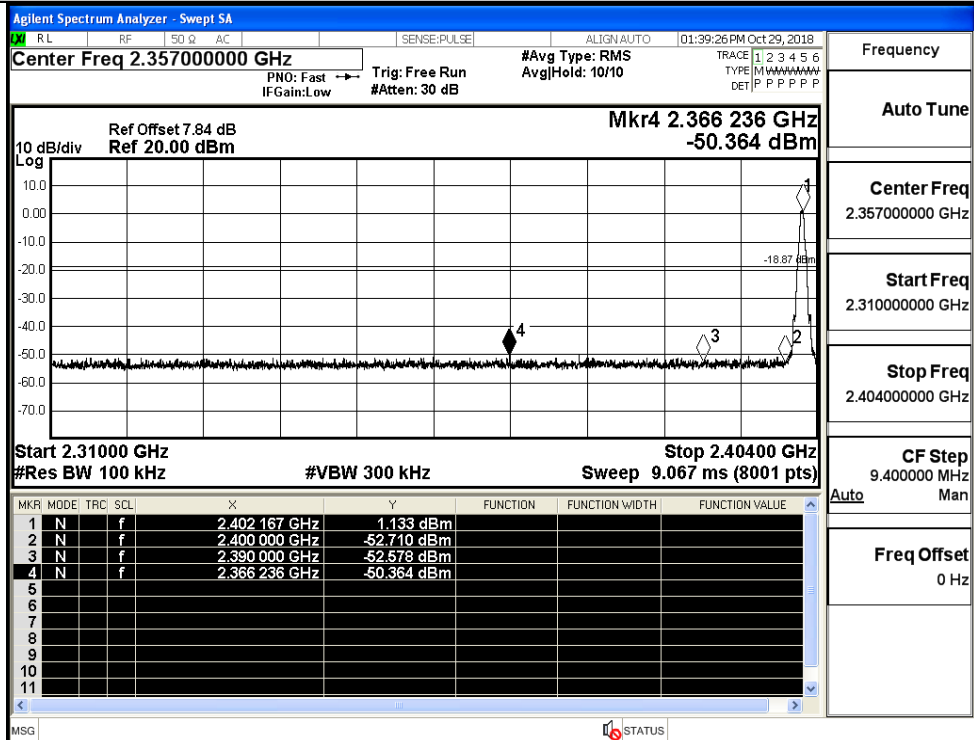


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.133	Off	-50.364	-18.87	PASS
			2.885	On	-49.875	-17.12	PASS
	HCH	2480	0.495	Off	-49.151	-19.51	PASS
			1.723	On	-49.999	-18.28	PASS
$\pi/4$ DQPSK	LCH	2402	-0.177	Off	-49.716	-20.18	PASS
			1.616	On	-50.020	-18.38	PASS
	HCH	2480	-1.117	Off	-49.574	-21.12	PASS
			0.002	On	-49.023	-20	PASS
8DPSK	LCH	2402	-1.369	Off	-49.823	-21.37	PASS
			1.459	On	-49.331	-18.54	PASS
	HCH	2480	-0.808	Off	-50.110	-20.81	PASS
			-0.052	On	-48.843	-20.05	PASS

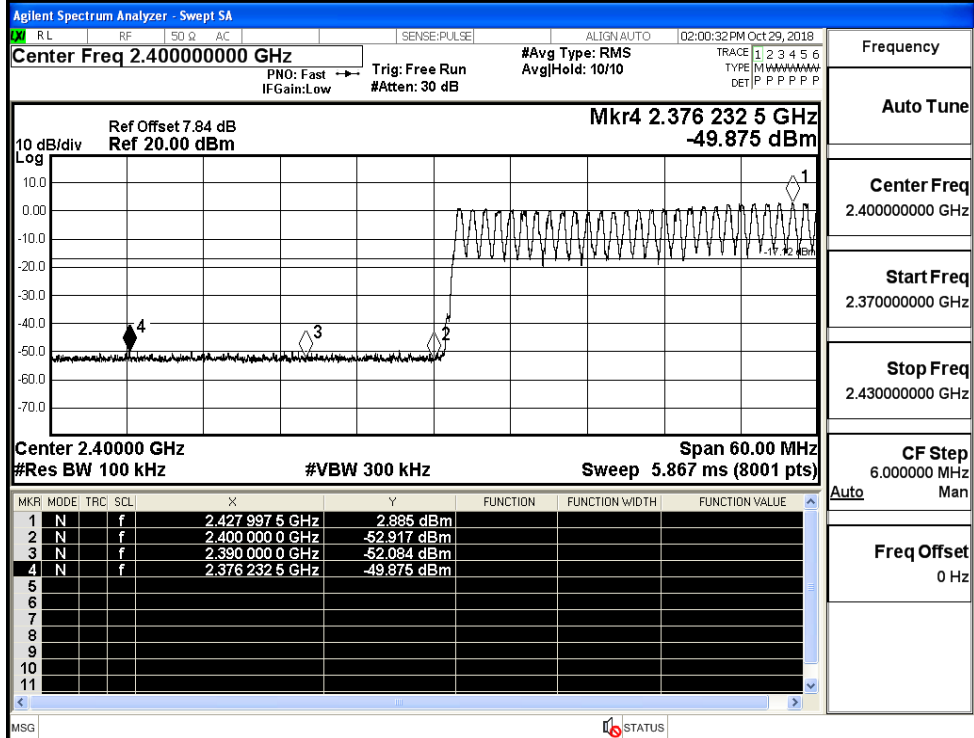
Test Graphs

GFSK/LCH/No Hop



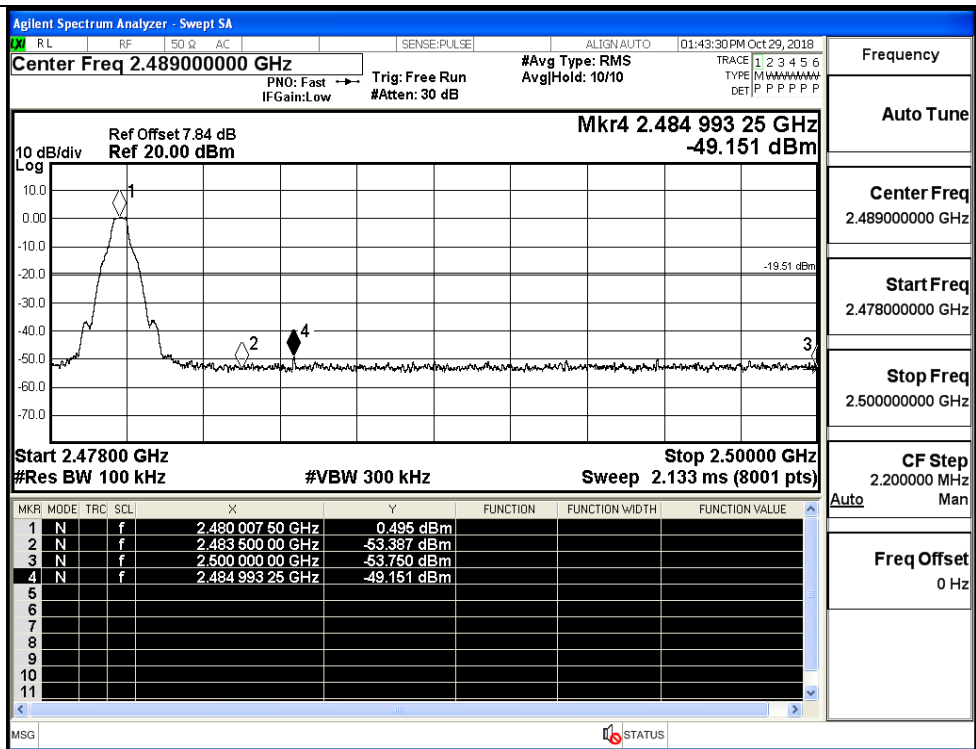
Frequency
Auto Tune
Center Freq 2.357000000 GHz
Start Freq 2.310000000 GHz
Stop Freq 2.404000000 GHz
CF Step 9.400000 MHz Auto Man
Freq Offset 0 Hz

GFSK/LCH/Hop

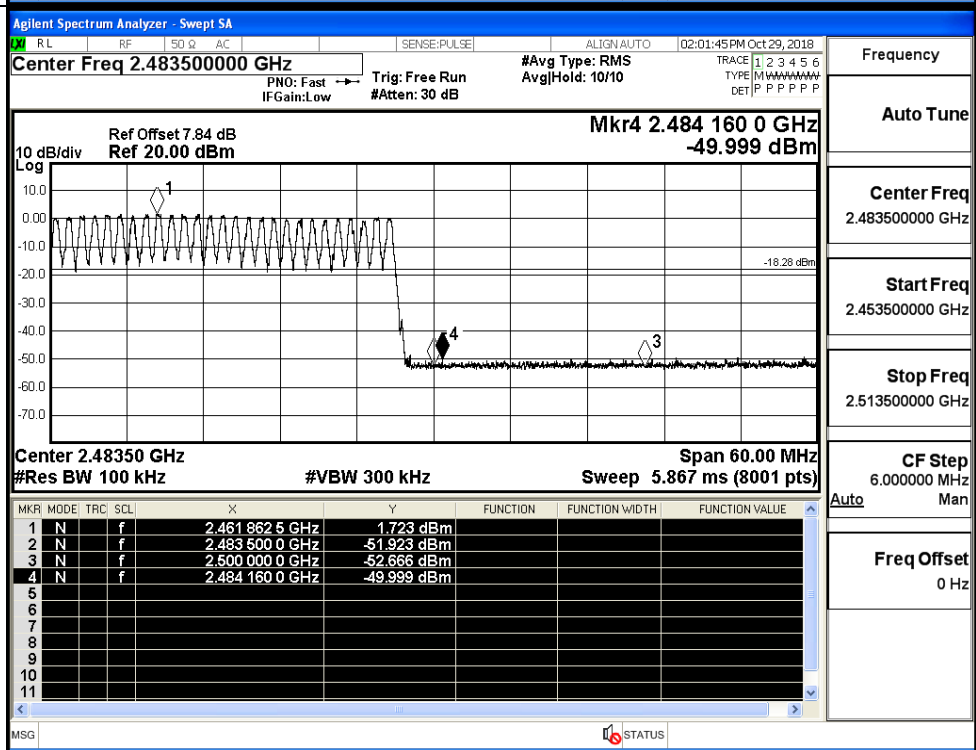


Frequency
Auto Tune
Center Freq 2.400000000 GHz
Start Freq 2.370000000 GHz
Stop Freq 2.430000000 GHz
CF Step 6.000000 MHz Auto Man
Freq Offset 0 Hz

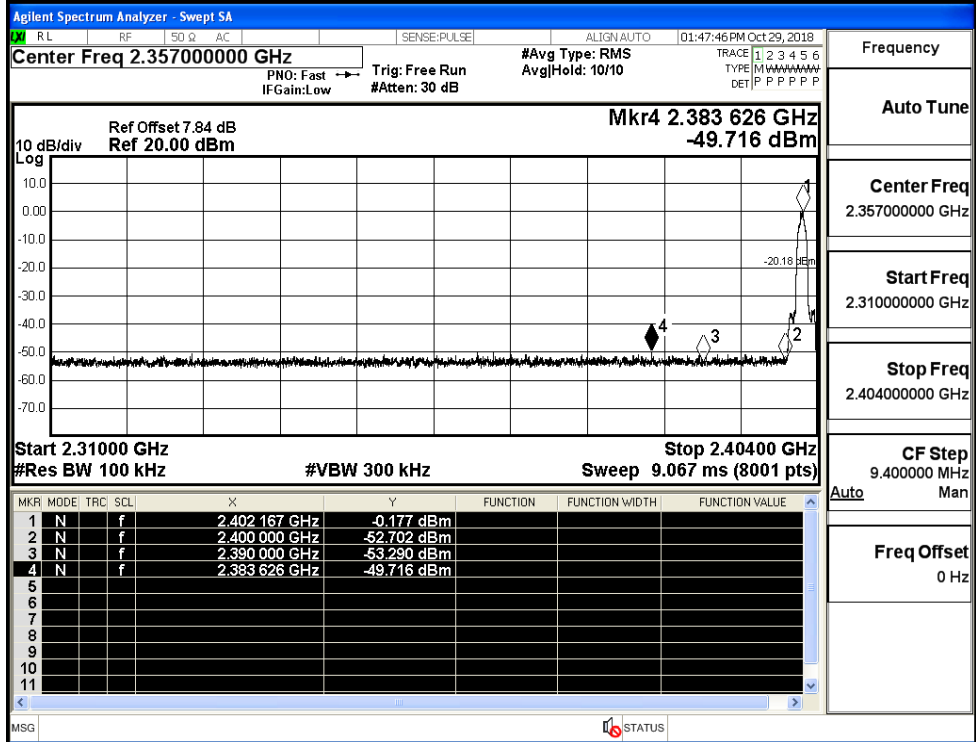
GFSK/HCH/No Hop



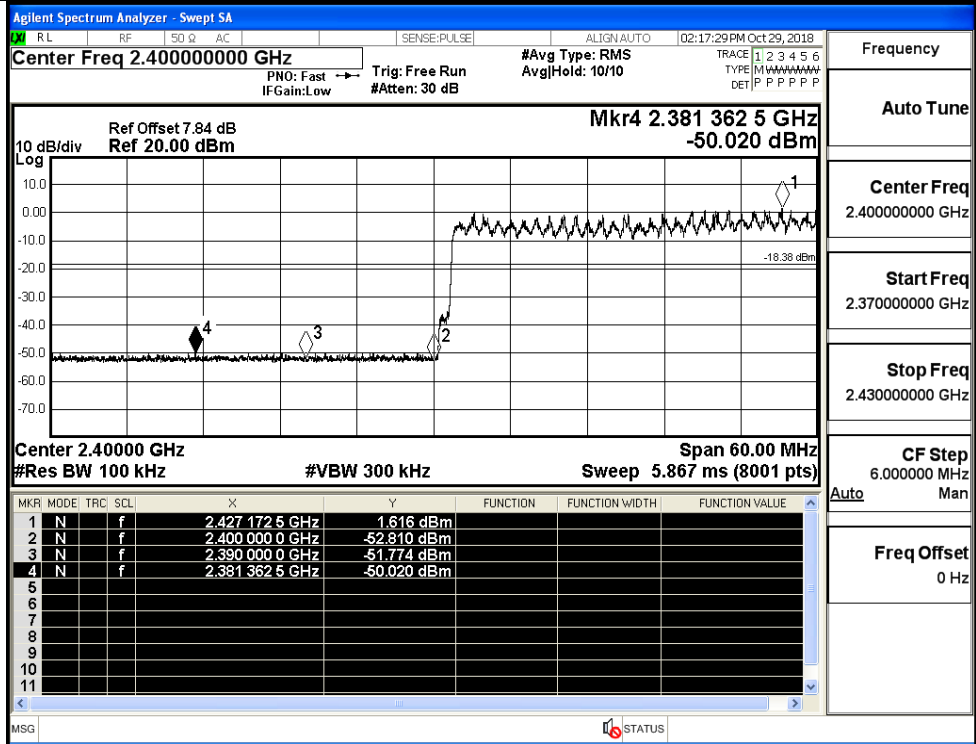
GFSK/HCH/Hop



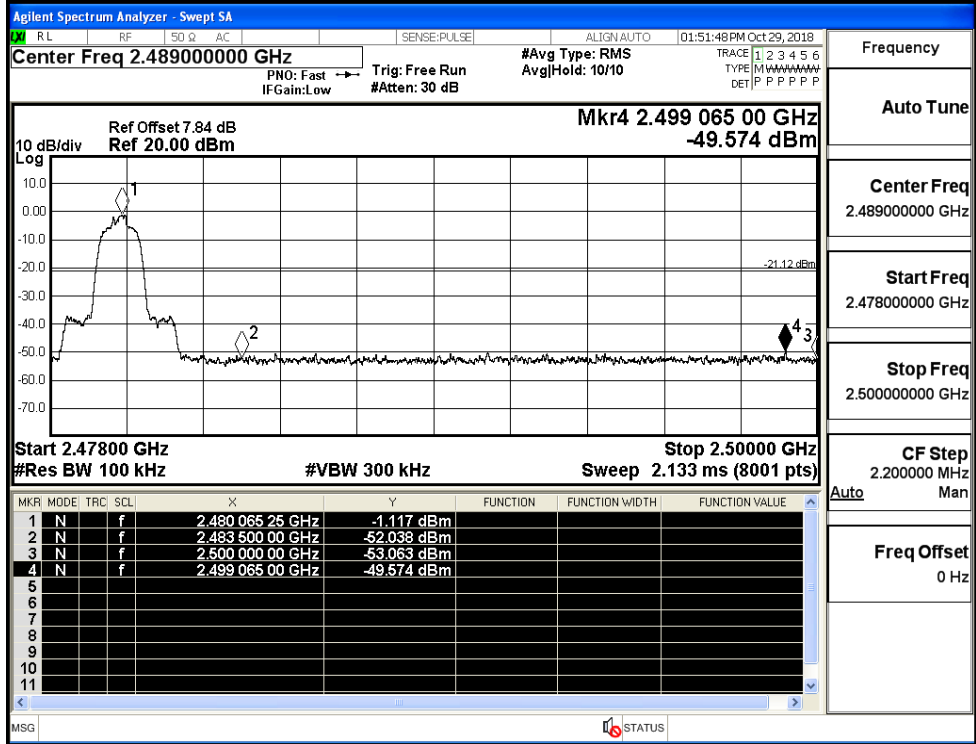
$\pi/4$ DQPSK/LCH/No
Hop



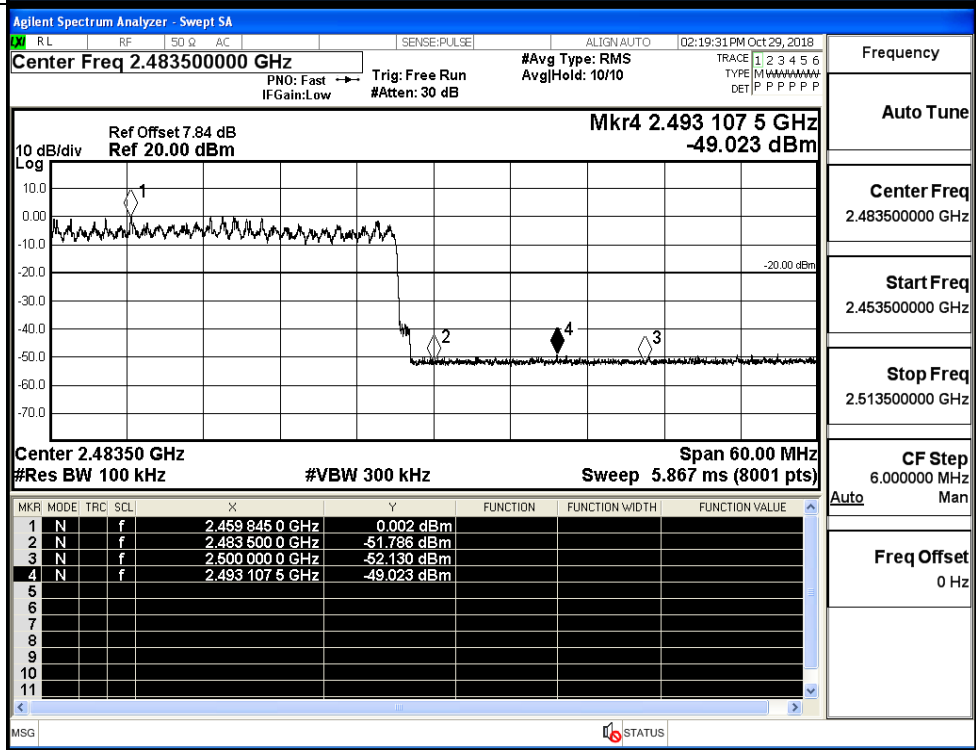
$\pi/4$ DQPSK/LCH/Hop



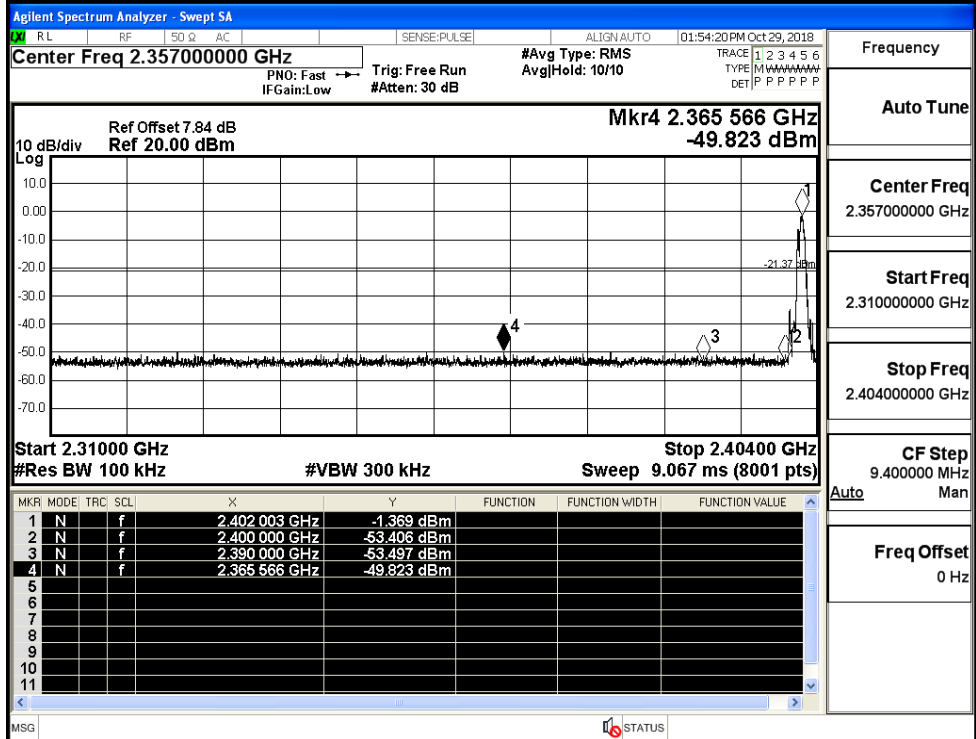
π /4DQPSK/HCH/No
Hop



π /4DQPSK/HCH/Hop

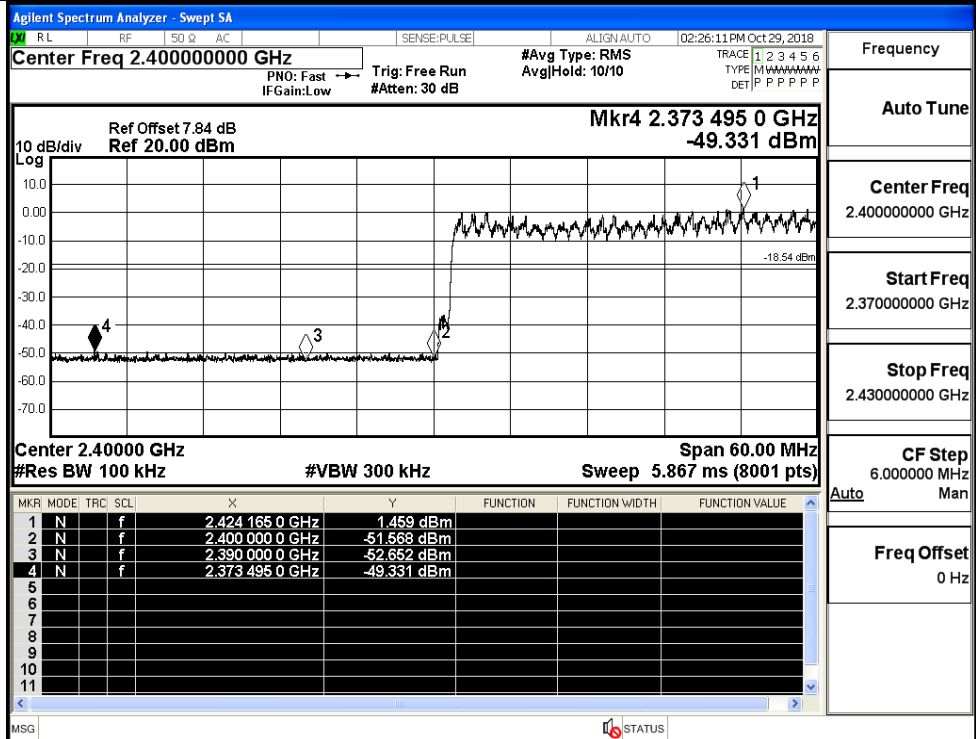


8DPSK/LCH/No Hop



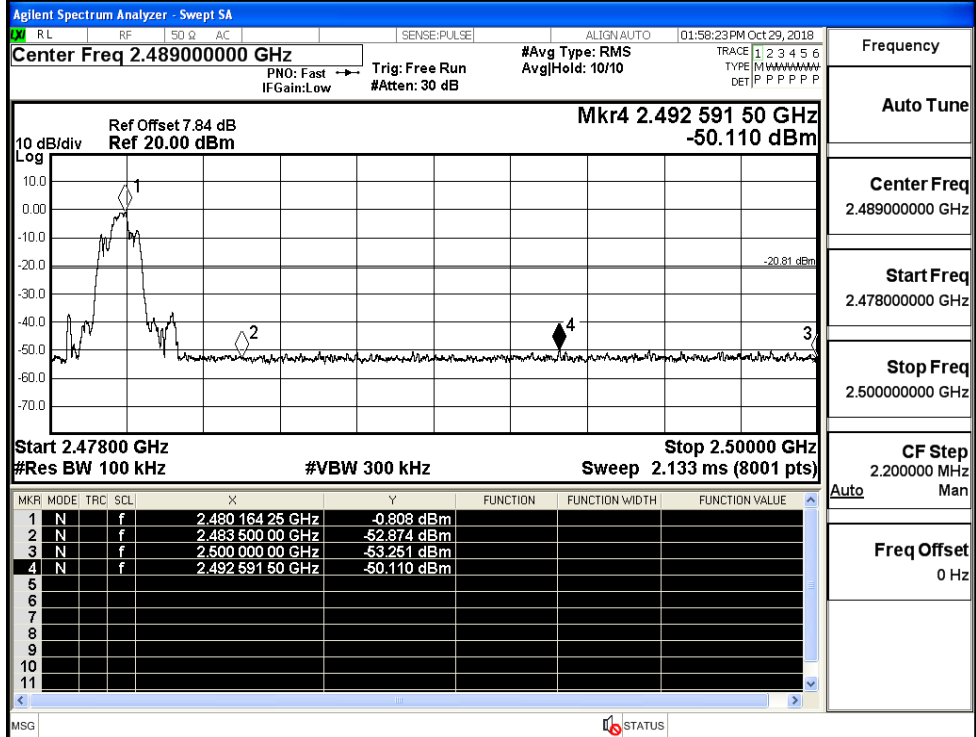
Frequency	
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH/Hop



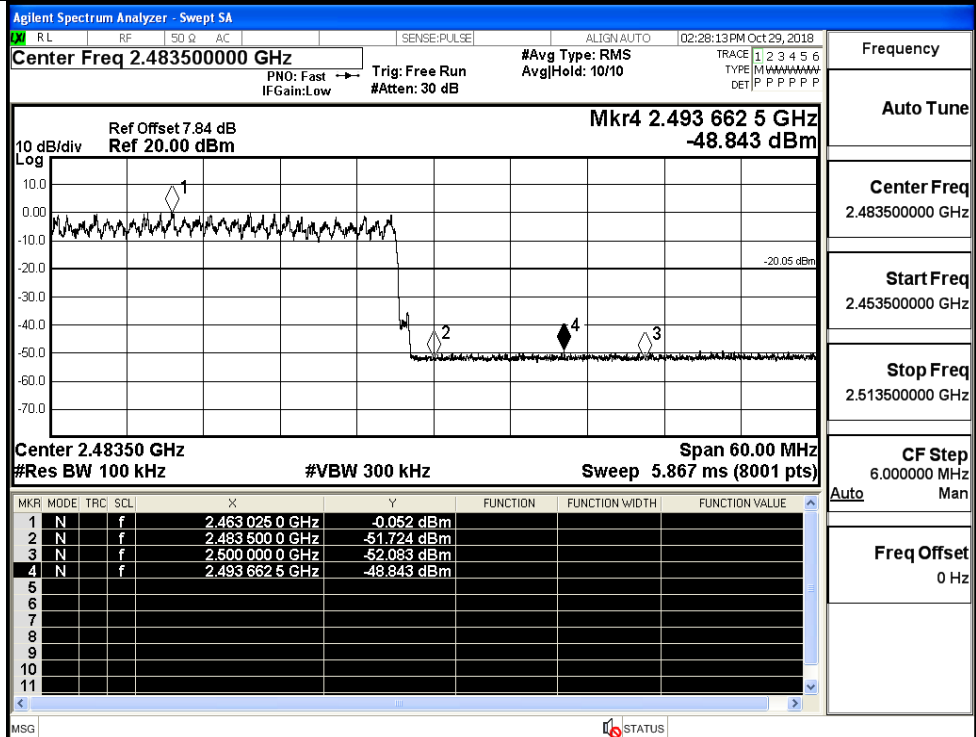
Frequency	
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/HCH/No Hop



Frequency
Auto Tune
Center Freq 2.489000000 GHz
Start Freq 2.478000000 GHz
Stop Freq 2.500000000 GHz
CF Step 2.200000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/HCH/Hop

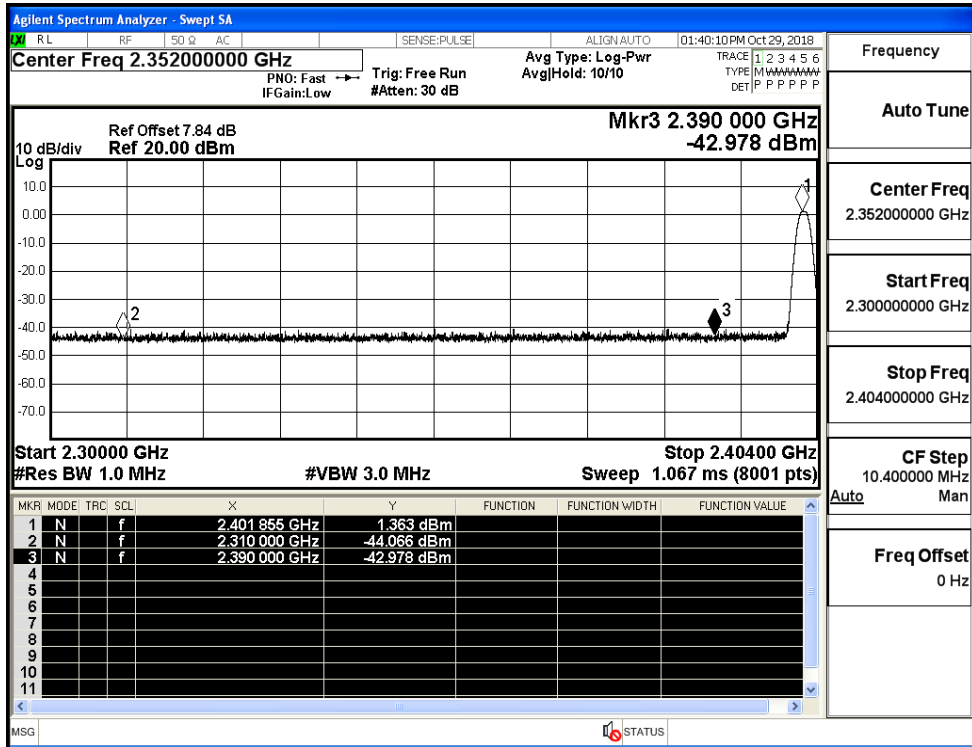


Frequency
Auto Tune
Center Freq 2.483500000 GHz
Start Freq 2.453500000 GHz
Stop Freq 2.513500000 GHz
CF Step 6.000000 MHz
Auto Man
Freq Offset 0 Hz

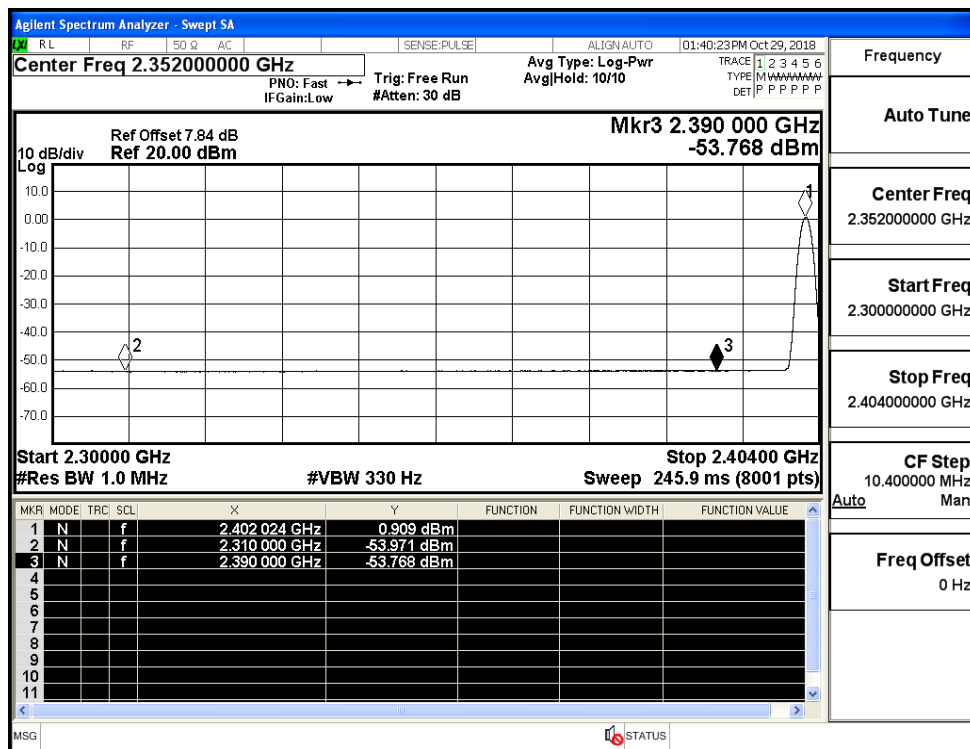
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.066	2.0	0	53.162	PEAK	74	PASS
	Off	2310.0	-53.971	2.0	0	43.257	AV	54	PASS
	Off	2390.0	-42.978	2.0	0	54.250	PEAK	74	PASS
	Off	2390.0	-53.768	2.0	0	43.460	AV	54	PASS
	Off	2483.5	-44.134	2.0	0	53.094	PEAK	74	PASS
	Off	2483.5	-53.407	2.0	0	43.821	AV	54	PASS
	Off	2500.0	-42.865	2.0	0	54.363	PEAK	74	PASS
	Off	2500.0	-53.408	2.0	0	43.820	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.171	2.0	0	53.057	PEAK	74	PASS
	Off	2310.0	-53.965	2.0	0	43.263	AV	54	PASS
	Off	2390.0	-44.028	2.0	0	53.200	PEAK	74	PASS
	Off	2390.0	-53.721	2.0	0	43.507	AV	54	PASS
	Off	2483.5	-42.679	2.0	0	54.549	PEAK	74	PASS
	Off	2483.5	-53.376	2.0	0	43.852	AV	54	PASS
	Off	2500.0	-42.912	2.0	0	54.316	PEAK	74	PASS
	Off	2500.0	-53.383	2.0	0	43.845	AV	54	PASS
8DPSK	Off	2310.0	-43.369	2.0	0	53.859	PEAK	74	PASS
	Off	2310.0	-53.969	2.0	0	43.259	AV	54	PASS
	Off	2390.0	-44.212	2.0	0	53.016	PEAK	74	PASS
	Off	2390.0	-53.674	2.0	0	43.554	AV	54	PASS
	Off	2483.5	-42.841	2.0	0	54.387	PEAK	74	PASS
	Off	2483.5	-53.280	2.0	0	43.948	AV	54	PASS
	Off	2500.0	-42.684	2.0	0	54.544	PEAK	74	PASS
	Off	2500.0	-53.234	2.0	0	43.994	AV	54	PASS

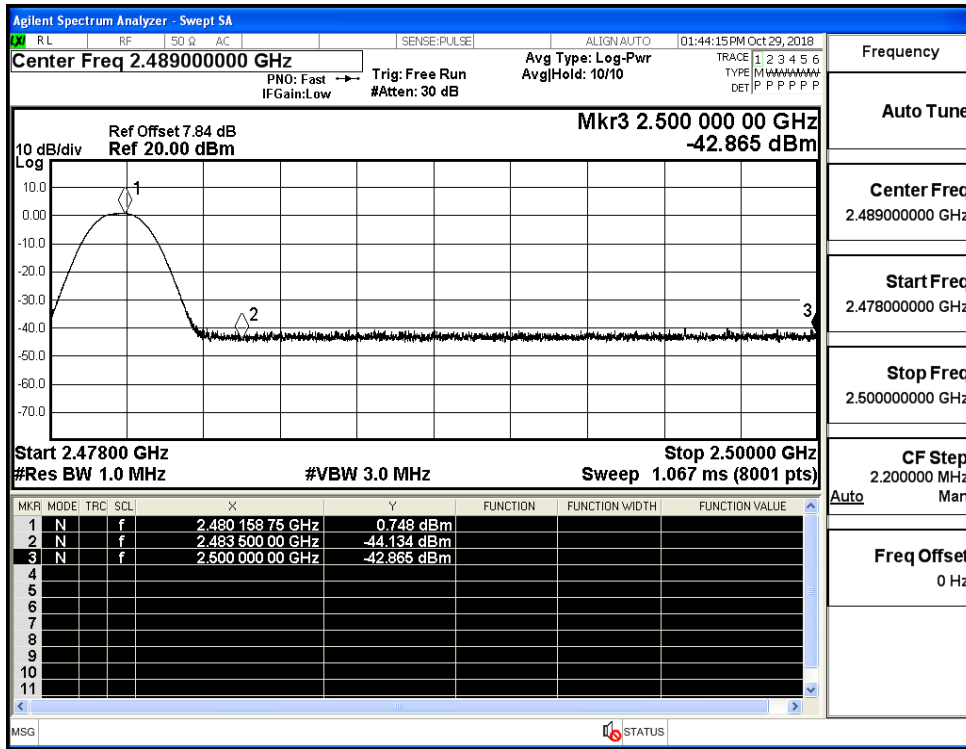
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



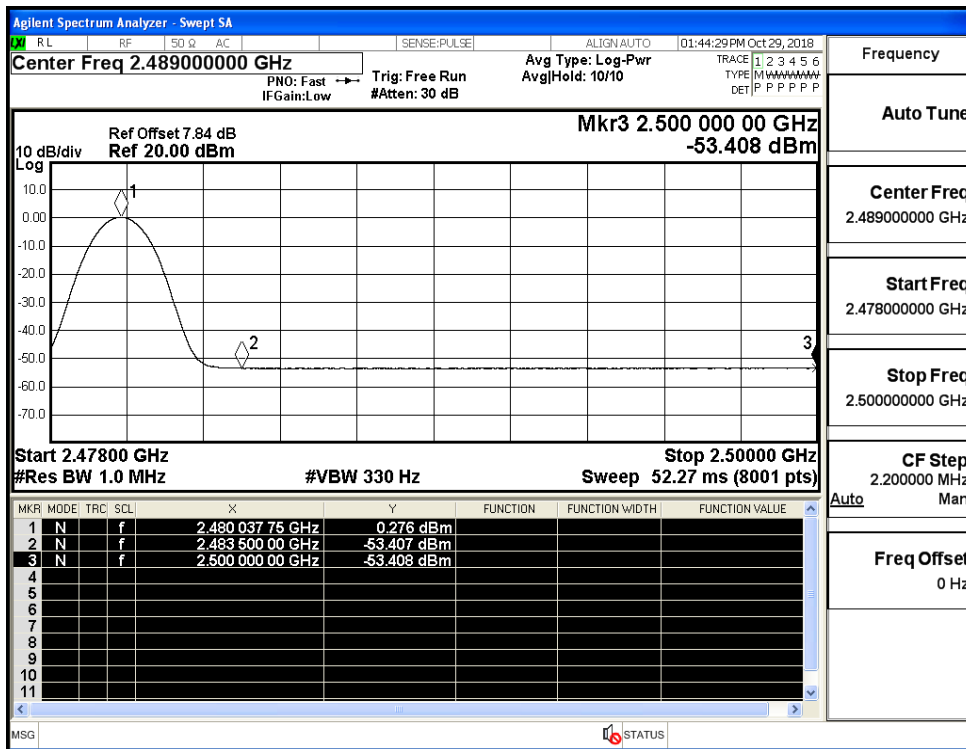
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



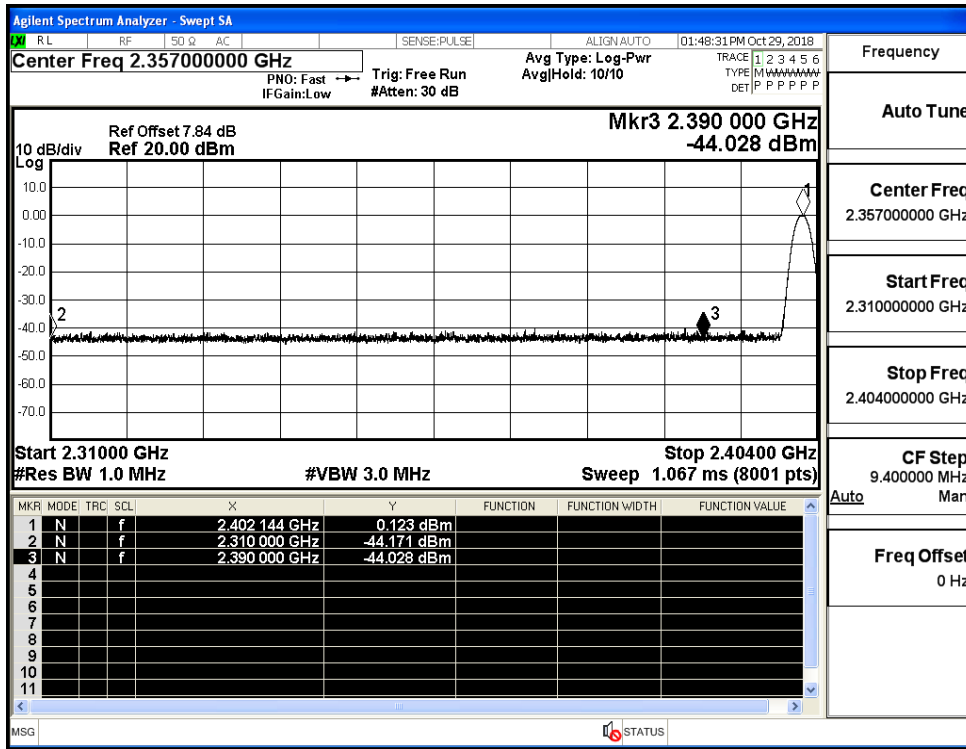
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



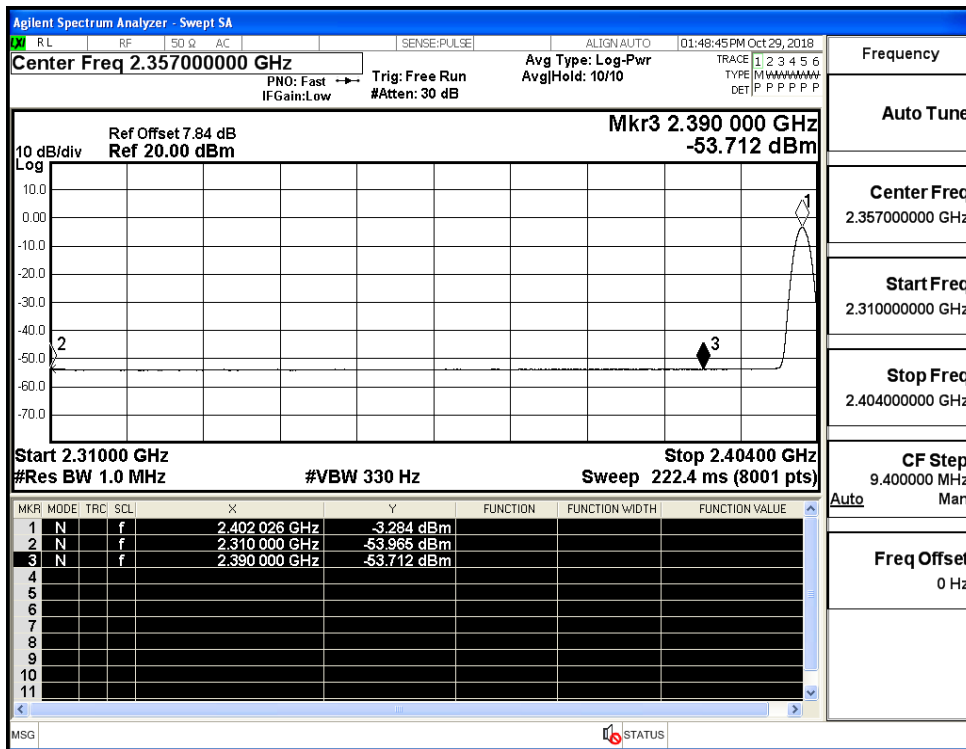
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



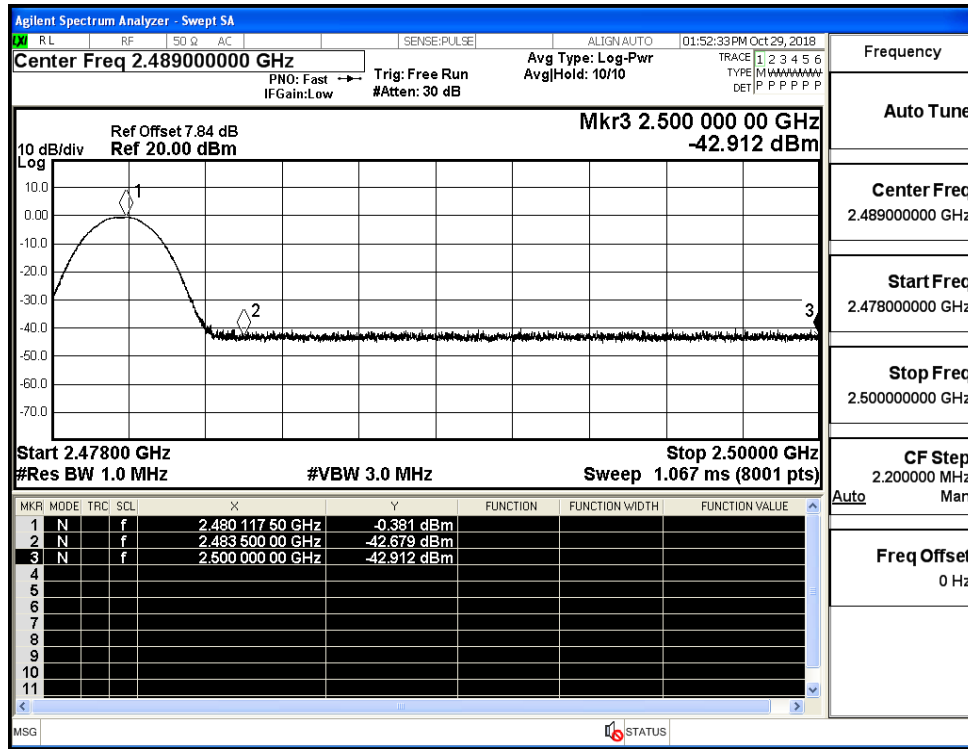
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



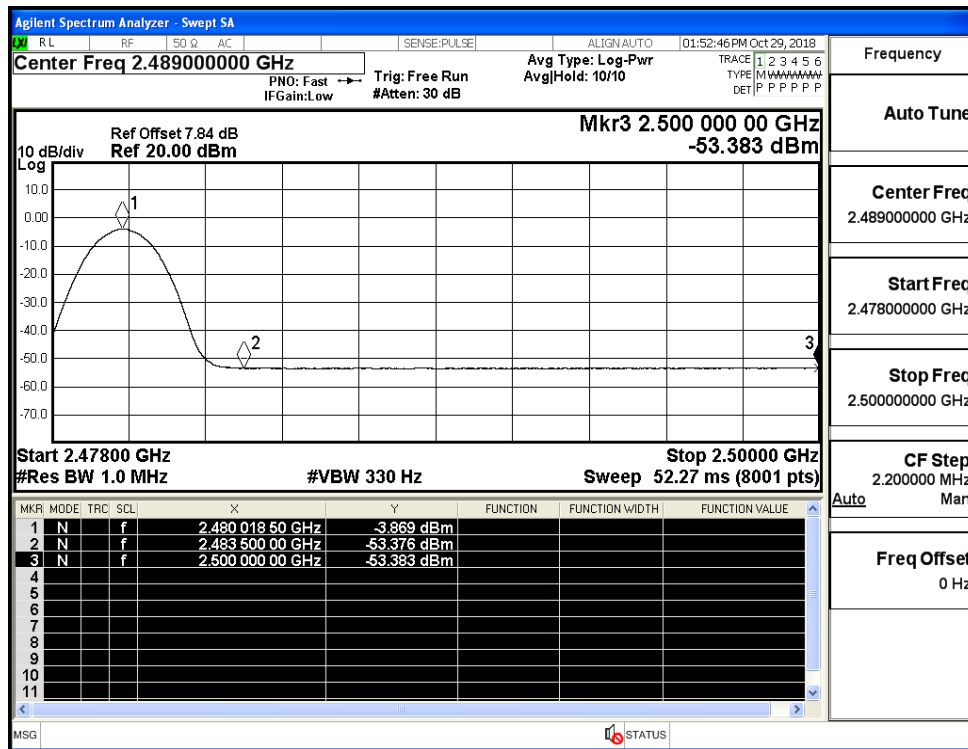
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



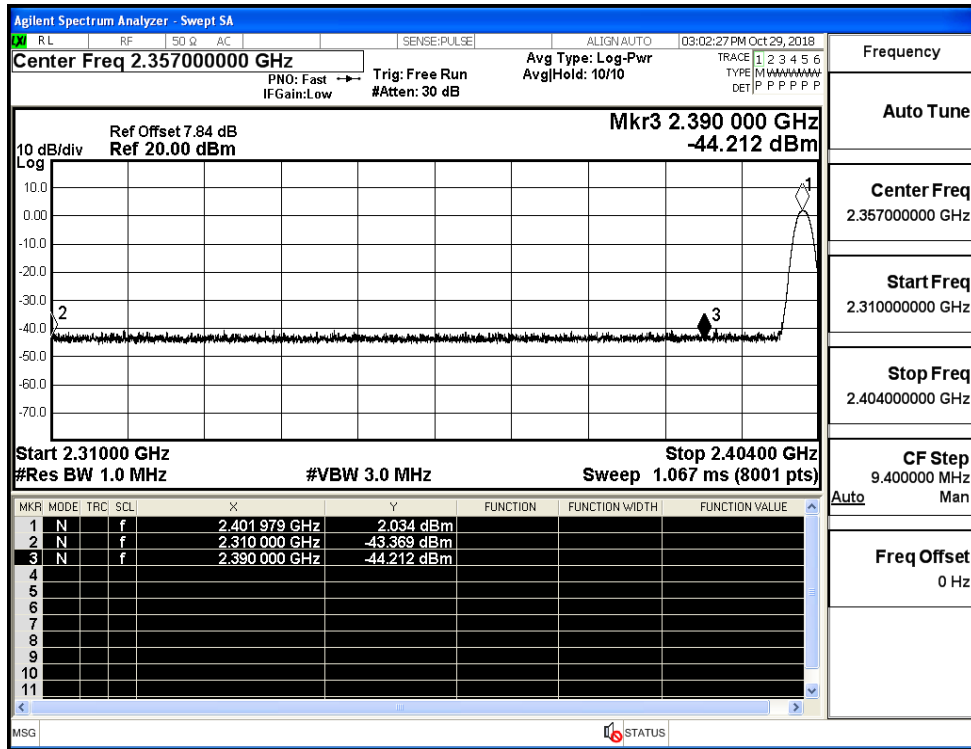
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



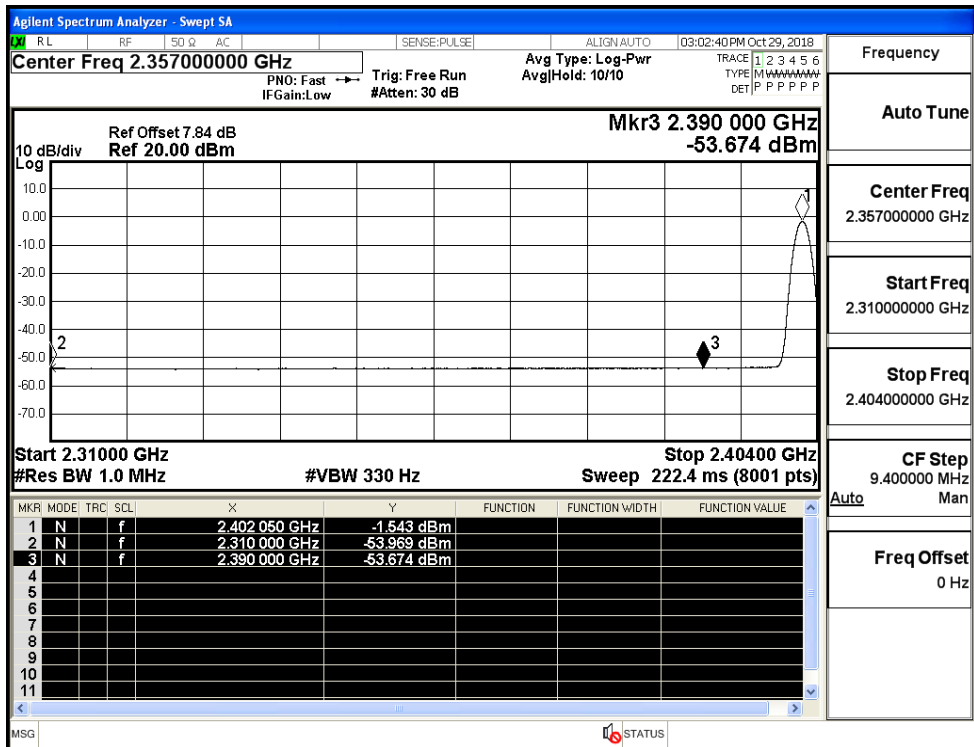
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



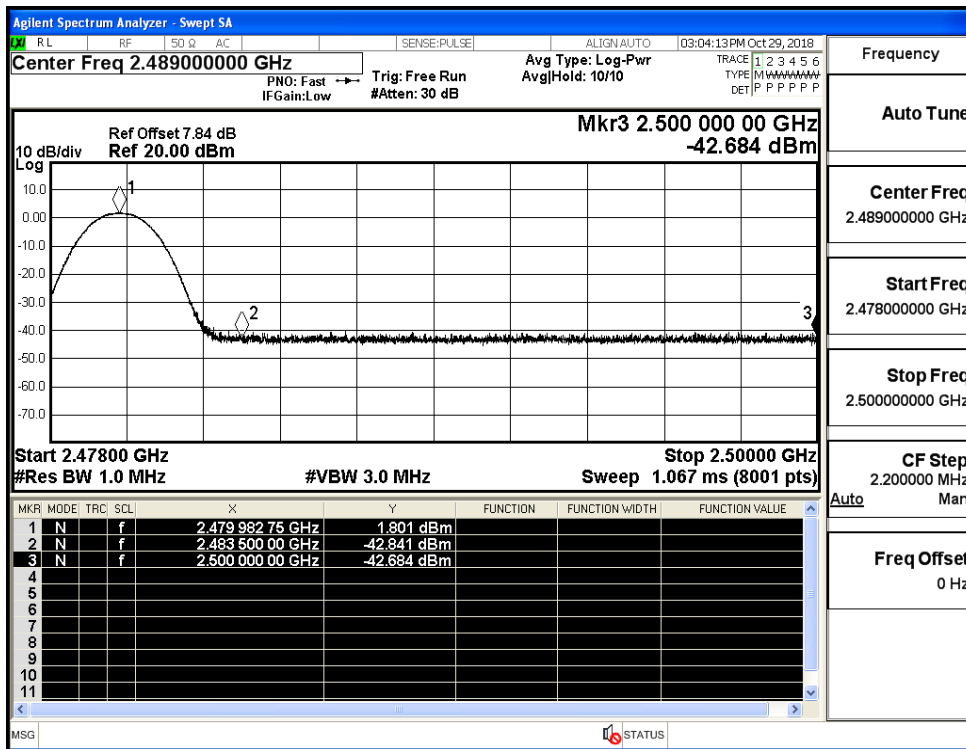
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)

